REPORT RESUMES

ED 014 434 24 SE 003 716
CONVERSATION-MATERIALS CONSERVATION, A SURVEY OF PRINTED MATERIALS FOR CONSERVATION EDUCATION.
BY- JOHNSON, CARL S. DAMBACH, CHARLES A.
OHIO STATE UNIV., COLUMBUS, RESEARCH FOUNDATION
REPORT NUMBER CRP-2213 PUB DATE 66
REPORT NUMBER BR-5-1058
EDRS PRICE MF-$1.25 HC-$11.88 295P.

DESCRIPTORS- *CONSERVATION EDUCATION, *INSTRUCTIONAL MATERIALS, ADULT EDUCATION, BIOLOGY, COLLEGE SCIENCE, EARTH SCIENCE, ELEMENTARY SCHOOL SCIENCE, EVALUATION, NATURAL RESOURCES, READABILITY, REFERENCE MATERIALS, SCIENCE MATERIALS, SECONDARY SCHOOL SCIENCE, UNITED STATES OFFICE OF EDUCATION,

FREE AND INEXPENSIVE MATERIALS FOR USE IN CONSERVATION EDUCATION WERE EVALUATED. THE OBJECTIVES OF THE PROJECT WERE TO DETERMINE (1) THE KINDS OF FREE AND INEXPENSIVE CONSERVATION MATERIALS WHICH MAY BE NEEDED, (2) THE KINDS THAT ARE BEING PRODUCED, (3) THE QUANTITY PRODUCED, AND (4) THE AGGREGATE EXPENDITURES FOR PRODUCTION. EFFORTS WERE MADE TO ANALYZE THE CHARACTERISTICS OF EXTANT MATERIALS, DETERMINE TEACHER AWARENESS OF CONSERVATION MATERIALS, AND RECOMMEND TO THE PRODUCERS OF MATERIALS WAYS OF INCREASING THE EFFICIENCY OF THEIR EFFORTS. MATERIALS FOR ANALYSIS WERE RANDOMLY SELECTED FROM 7,524 TITLES RECEIVED. THREE SETS OF JUDGES--EDUCATORS, CONSERVATIONISTS, AND CLASSROOM TEACHERS--EVALUATED THE 1,541 PIECES IN THE SAMPLE. A STRATIFIED RANDOM SAMPLE COMPRISING ABOUT THREE PER CENT OF THE TEACHERS IN MINNESOTA, MISSOURI, AND OHIO WAS USED IN DETERMINING TEACHER AWARENESS OF CONSERVATION MATERIALS. BOTH NATIONAL-LEVEL MATERIALS AND STATE-LEVEL MATERIALS FOR EACH OF THE TESTED STATES WERE USED IN THE ASSESSMENT. THE DATA RESULTED IN 60 CONCLUSIONS ABOUT THE MATERIALS INCLUDING SUCH AREAS AS (1) QUANTITY OF EXTANT MATERIALS, (2) PRODUCERS OF MATERIALS, (3) TARGET GROUPS FOR MATERIALS, (4) READABILITY, (5) TOPICS COVERED, (6) COST OF PRODUCTION, (7) TEACHER AWARENESS, AND (8) SUGGESTED IMPROVEMENTS FOR PRODUCERS. A COMPLETE LIST OF THE PRODUCERS OF MATERIALS USED IN THE PROJECT IS APPENDED. (DS)

BR 5-1058

PA 24

ED014434

Conservation - Materials Conservation
A Survey of Printed Materials for Conservation Education

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Cooperative Research Project No. 2213

Carl S. Johnson
and
Charles A. Dambach

The Research Reported Herein Was
Supported by the Cooperative Research Program
of the Office of Education,
U. S. Department of Health, Education and Welfare

SE 003 716

The Ohio State University
Research Foundation
Columbus, Ohio 43212

CONSERVATION-MATERIALS CONSERVATION

A SURVEY OF PRINTED MATERIALS FOR CONSERVATION EDUCATION

Cooperative Research Project No. 2213

Carl S. Johnson, Associate Professor
Department of Zoology and Entomology
Project Director

Charles A. Dambach, Director
Natural Resources Institute
Associate Project Director

David L. Erickson, Research Associate

The Ohio State University
Columbus, Ohio
1966

The research reported herein was supported by the Cooperative Research Program of the Office of Education, U.S. Department of Health, Education, and Welfare.

CONTENT

I. INTRODUCTION

The problem 1
Objectives of the study 2
Related research 4
Collections of conservation materials 6
Our study
  Collecting materials 7
  Obtaining information from producers 8
  Evaluating qualities of materials 8
  Measuring teacher awareness of materials 9
  The volume of data resulting 9

II. THE COLLECTION OF MATERIALS

Developing the list of potential producers 10
Response to first mailings 11
Amending the mailing list 12
Second mailing to non-respondent offices 13
Results of mail requests for materials 13
Visiting the producers 14
Handling the materials received 16
Sorting the materials 17
Serial numbering 18
Selecting the analyses sample 19
Mechanics of filing 19
The collection 22

III. HOW MUCH MATERIAL IS PRODUCED?

Extrapolation from visitation results 23
Reports from producers 24
Counting from publications lists 24
The minimum estimate 25

IV. FOR WHOM IS THE MATERIAL PRODUCED?

Most of our material is for the general public 26
Most of our technical material obtained by visitations to producers 28
Agencies report most material technical 28

V. WHO PRODUCES CONSERVATION MATERIALS?

Four-tenths of potential producers sent materials 32
How many offices produce conservation materials? 33
State-level offices produce more titles 34
Who produces materials for schools? 34
Most producers publish very few titles 36
Who prints more copies? 36
Why do they produce materials? 37

VI. WHAT FORMATS PREDOMINATE?

Procedure for classifying format characteristics 39
The material analyzed 40
Characteristics of the material 40
Differences between audience groups 43
How much do desired characteristics cost? 45

VII. WHAT DO FREE MATERIALS COST? COSTS AND QUANTITIES

Procedure for obtaining data 47
How many copies are printed? 48
Do quantities differ among audiences? 49
Are the quantities adequate? 49
The million-copy titles 54
How much do free materials cost? 54
Do materials for schools cost more? 56
What is the aggregate annual expenditure for free materials? 56

VIII. WHEN WERE THE MATERIALS PRODUCED?

The practice of not dating materials 58
Where do undated titles come from? 58
What do undated materials discuss? 59
How long do materials last? 60
Does undated material last longer? 62

IX. HOW READABLE IS THE MATERIAL?

Selecting a system for measuring readability 65
How we measured readability 66
Readability of some well-known materials 67
Testing reliability of the sample 67

Readability levels of the materials for teachers 68
Readability of student materials 70
Readability of public materials 70
The technical material is technical 71
Are conservation-related words the problem? 71

X. WHAT DO THE MATERIALS TELL? SCOPE AND CONTENT

Scope of the material as determined by crude sort 73
Content-analysis procedure 75
Content of material on soil 78
Materials on water 78
Materials about minerals 80
Materials on plants 80
Materials on animal resource 82
Recreation materials 82
Content of miscellaneous materials 84
Materials in the general category 85
Some summary remarks on content of materials 85

XI. HOW GOOD ARE THE MATERIALS? QUALITY ANALYSIS

Procedure for measuring quality 87
We used three sets of judges 88
Judgments common to all judges 88
Quality judging 89
Educational-potential judging 89
School-use judging 90
The control judgments and weighting systems 90
Logistics of judging 92
Recording of the data 92
Analysis of results 93
How did judges rate quality of materials? 93
How did appearance rate? 94
Characteristics of the most highly rated material 95
Relationships between judgment sets 95
Conservationists are least affected by appearance 96
Conservationists are the best predictors of quality rating 96
What is the relationship between material quality and teacher use? 98

XII. ARE TEACHERS USING THE MATERIALS? TEACHER-AWARENESS TEST

The problem 102
Objectives of the awareness test 102
Development of the test instrument 102
Selecting the publications to be tested 103
Selecting the states 104
Procedures for getting response 104
Pre-testing the questionnaire 105
Selecting the sample 105
Mailing the questionnaire 107
Response 107
Encoding the data 107
The computer program 108
Awareness scores were low 109
State publications are better known than are national ones 109
Intermediate teachers score higher 113
A few pieces were recognized by one-fourth or more 114
Eleven pieces were known to ten percent of the teachers 116
The Smokey Bear Story 116
Conclusions 117

XIII. SUMMARY AND CONCLUSIONS

The project described 118
Enumerated conclusions 119

REFERENCES 132

APPENDICES

APPENDIX A - Exhibit of letters and forms used

APPENDIX B - List of producers represented in the collection of materials

APPENDIX C - Tabulations of numbers of titles from each producer and summary tables

APPENDIX D - Miscellaneous data tables

APPENDIX E - Instructions, forms, and data tables on the judging of the materials

APPENDIX F - Sample questionnaires, results from teacher-awareness testing

APPENDIX G - Key to data decks

LIST OF FIGURES

Figure 1. Response to 2, 272 mailed requests for materials 15

2. The sorting scheme for materials 18

3. Audiences to whom materials are addressed 27

4. Comparison of sample with the whole on types of materials for students 41

5. Comparison of sample with the whole on formats of technical materials 42

6. Logarithmic plot of quantities published 51

7. Cumulative plot of copies per title for 711 titles 52

8. Distribution of dated and undated titles by year of publication 63

9. Readability levels of the materials for the four audiences 69

10. Distribution of 7, 524 titles by subject 74

11. Distribution of the 102 titles teacher judges indicated they would use by deciles of quality and appearance ratings 99

12. Awareness score for each publication tested and moving average thereof through the test 112

LIST OF TABLES

I. Offices contacted in initial mailing 11

II. Response to the first request for materials 12

III. Tabulation of materials by sorting category 20

IV. Tabulation of publications lists received 21

V. Percent of titles received by visitation 29

VI. Number of titles by audience and producer group 34

VII. Audience distribution of materials for each producer group 35

VIII. Percent of titles by audience and producer group 36

IX. Mean copies per title for national and state producers 37

X. Comparison of format characteristics of all materials with 40 pieces judged highest for appearance 44

XI. Format characteristics of the sample by audience 44

XII. Printing costs for materials of different format characteristics 45

XIII. Number of copies per title, logarithmically seriated 50

XIV. Quantities printed per title for the various audiences 53

XV. Cost per copy for 502 titles 55

XVI. Comparison of costs of materials for the four audiences 56

XVII. Estimated annual expenditure for conservation materials 57

XVIII. Comparison of percentage of undated titles with total titles by producer group 59

XIX. Percent of undated material in each sorting category 60

XX. Publication dates and progressive reduction of dated materials in the collection 61

XXI. Comparison of date of publication for dated and undated titles 64

XXII. Readability measurements of sample and the whole for student materials 68

XXIII. Comparison statistics on readability of materials for the four audiences 71

XXIV. Percentage distribution of 7,524 titles by subject as measured by crude sort 75

XXV. Distribution of materials for each audience by subject as determined by content analysis 77

XXVI. Percent of titles on soil treating various topics 79

XXVII. Percent of titles on water treating various topics 79

XXVIII. Percent of titles on minerals treating various topics 81

XXIX. Percent of titles on plant resources treating various topics 81

XXX. Percent of titles on animal resources treating various topics 81

XXXI. Percent of titles on recreation treating various topics 83

XXXII. Content of the miscellaneous category 84

XXXIII. Means and standard deviations for quality and appearance judgments for the four audience groups 94

XXXIV. Correlation matrix for all sets of quality and appearance judgments for teacher material 97

XXXV. Seriation of teacher-awareness scores for 1,184 teachers in three states and one group of conservation-workshop alumni 110

XXXVI. Teacher-awareness means in three states and comparison of elementary teachers with secondary 111

XXXVII. Comparison of mean awareness scores per publication for state and national publications in the three states tested 114

XXXVIII. Percent of each state's teachers scoring five or more points on each of 22 publications 115

CHAPTER I -- INTRODUCTION

Several hundred agencies, organizations and industries annually produce several thousand pieces of so-called free and inexpensive printed materials on conservation, or on health and safety, or on vocations, or on many other subjects. The volume of this production related to natural resources is tremendous.

More than 300 state and federal agencies, nearly 200 state and national organizations, and at least 200 industries and industrial associations produce conservation-education materials. The U.S. Departments of Agriculture and The Interior together publish well over 4,000 titles a year. The aggregate production is at least 6,000 titles and well over 500,000,000 copies per annum. More than 20,000 titles related to natural resources are on the active list at any given time. Less than ten percent of the titles produced are intended for schools but much of that not specifically prepared for schools nevertheless is distributed to them. The annual expenditures for preparation of the materials is over one-hundred million dollars.

However, very little has been done to evaluate either quality of the materials, the effectiveness of their distribution, or their use in schools. Many studies have been made of "commercially sponsored" educational materials in some fields, but no study has been made of conservation-education materials or of their educational impact. "Sponsored" materials for conservation differ from "commercially sponsored" materials covered in previous studies primarily in that most conservation materials are sponsored by governmental agencies and private organizations instead of business and industry.

Ever since the early 1920's a considerable literature has developed about sponsored materials. Numerous sets of criteria have been developed for screening or evaluating these "free and inexpensive" materials. Guarding against bias and advertising are prevalent concerns. Industrially-produced materials have been suspect; governmentally-produced materials have not been questioned, they have been passed by not being subjected to the severe scrutiny advocated by educators for "commercially sponsored" materials.

Conservation materials vary in format, in quality, in accuracy, and in freedom from objectionable bias. There are duplications. There are some contradictions. Some natural resources have received very little attention. The materials vary in suitability for school use. Most of the materials are technical. Range in grade levels of readability is smaller than claimed. Distribution systems vary greatly. It seems certain that much material does not reach the teachers or the pupils for whom it was intended.

It is to help increase the effectiveness of the materials-production effort that this study was proposed. Responsible organizations, agencies, and educational leaders want to increase the effectiveness of that production and eliminate poor materials and unwarranted expenditures. Among those that have requested that conservation materials of all producers be evaluated are the U.S. Soil Conservation Service, the U.S. Forest Service, the Soil Conservation Society, and the Conservation Education Association. Several hundred producers of materials cooperated magnanimously in this study for the "conservation of conservation materials."

OBJECTIVES OF THE STUDY

"Project Conservation-Materials Conservation" we entitled the study. It was sponsored by the Cooperative Research Program of the U.S. Office of Education and The Ohio State University. It proposed to measure quantity, scope, quality, expenditure, teacher awareness, and use of free and inexpensive materials on conservation. The emphasis was on materials prepared for, distributed to, or made available to schools, i.e., on materials directly or indirectly intended for conservation education.

The study proposed to determine factors which control the effectiveness of conservation-education materials. These include distributions systems as well as qualities and quantities of materials. The major objective of the study was to determine ways of making the aggregate efforts to assist conservation-education by way of materials more effective, hence the title "conservation materials conservation." The specific objectives of the study were to obtain answers to the following questions:

1. How much free printed materials on conservation is prepared for schools?

2. Why is the material produced?

3. How adequate is the quantity per title with relation to numbers of schools, of teachers, and of students?

4. What is the aggregate annual expenditure for production, for printing, and for distribution of sponsored conservation education materials?

5. Which natural resources receive most and least attention?

6. What are the imbalances of scope?

7. What is the content of the material? Is it more recent than text materials? Does it supply depth?

8. What is the readability level of the materials?

9. To what kind or kinds of audience is the material addressed?

10. What biases are apparent?

11. Is there factual error?

12. Is free material more up-to-date than textbook materials?

13. For what subjects or curriculum areas are materials suited?

14. Is the material applicable to subjects taught within its readability level?

15. Of which kinds of materials are teachers most aware?

16. Of what sources are teachers most aware?

17. In what manner is the material used in schools, and in what subjects?

18. Which materials are found in school?

19. What correlation exists between quantity distributed and teacher awareness, between appearance and awareness, and between quality and awareness?

20. What seem to be the most effective distribution systems?

RELATED RESEARCH

Except for that produced by commercial sponsors (business and industry), little research has been done on "sponsored" printed materials for schools. The vast array of printed materials produced and distributed by governmental agencies and by private organizations has not been studied. Such research as has been done has been limited to the materials of a single agency or restricted to a few schools, a single subject, or no more than one state.

Robert Lusk (1956) in his study of educational materials produced by the American Automobile Manufacturers Association describes a procedure for determining what materials are needed which may be applicable. Helen Siegel (1956), in studying teachers' use of business-sponsored materials in elementary schools, indicated that teachers recommend more information on the grade level and curriculum areas for which the material is suited. Both studies recommend practices to increase effectiveness of the materials expenditures for one sponsor, the American Automobile Manufacturers Association. These studies have precedents in several previous studies dealing with industrial sponsors but disregarding governmental agencies. They also illustrate the fact that industrial associations have more often critically evaluated their own free materials than have any other group of producers. They apply the experiences and techniques of the advertising and public relations fields.

Lee Sprowles (1948) published a detailed report on the Sloan Foundation Project and its preparation of instructional materials for the improvement of food production and diets. The study concludes that materials specifically for a single region and grade level are most effective, i. e., "rifles are more effective than shotguns" in the jargon of materials producers. In this instance, the material was developed by educators and resource specialists as a part of an educationally-oriented project conducted by a university for a specific physiographic region. His recommendation is the basis for examining the areal orientation of conservation materials. His advantage was in dealing with materials for a specific problem in a homogeneous region.

Carlisle Kramer (1953) estimated that annual expenditure for production of sponsored instructional materials was over $100,000,000 a year. Kramer defined "sponsored materials" as those produced by industries and others in the private sector. On the basis of results with nine evaluating committees, he decided that committees will not, unless great care is taken in creating them, be effective in appraising materials. He could not get adequate agreement from his committee. His problems and his recommendations yielded a system for evaluation for this project even though his judging results were negative.

Several studies indicate almost universal use of "free materials." Keith Roper (1956) reported that "96 percent of chemistry teachers use at least some industry-sponsored instructional materials." He assumed that every sponsor had "an ax to grind," denying the possibility, or the acceptability, of patriotic altruism. Roper's reservations are typical of those pervading the literature on free materials. Yet several studies report that 87 to 96 percent of teachers do use "commercially sponsored" materials.

Kramer, Lusk, and Roper attempted the development of criteria for evaluation of materials. Some of their criteria are quite elaborate, an attempt to produce objectivity in evaluation. We believe that elaborate criteria defeat the intended function, a phenomenon we discuss in Chapter XI. All the foregoing studies contain extensive bibliographies of preceding studies and related literature.

There has been no study of conservation-education materials on a national scale. There have been very few studies of governmental-agency materials. There have been no apparent checks on distribution systems or facilities, other than libraries, for free and inexpensive instructional materials, although it has often been recommended that distribution be made more efficient. There have been spot checks of the effectiveness of materials but these vary so much in method as to not be comparable.

One recent evaluation of an agency's own materials, sponsored by the U.S. Forest Service, was done in California in 1962-1963. Dr. William Hammerman, Assistant Professor of Outdoor Education at San Francisco State College, was in charge. Packets of USFS materials were sent to 165 "willing" teachers in a randomly selected set of California schools, secondary as well as elementary. Sixty-three teachers, 81 percent of them elementary, returned score cards in May of 1963 reporting which of the 53 publications they had used, in what subjects they had used them, and their own and student evaluations of those materials.

No report was published; a few typed copies were submitted to the U.S. Forest Service as "First Report, Instructional Materials Evaluation, Project Number I & E 302-905-33." The responding teachers were very critical of the vocabulary level and of the overlap and repetition present in the 53 pieces. The summary recommendations were:

"1. Discontinue many items of the leaflet type which overlap, are out-of-date, or are not stimulating in format.

"2. Produce fewer items of better quality....

"3. Design some future materials specifically for the general public in simple, inexpensive form; some more technical materials for schools and related educational uses; and some particularly for direct use by children with vocabulary appropriate to their level."

These recommendations, with the exception of the remarks about materials for the general public which neither their nor our project was designed to prove, are also supported by our project. Unfortunately, the results of the USFS project were not available until our project was well underway.

The U.S. Fish and Wildlife Service employed a consultant to evaluate its publication program; this survey was also made in 1963, Survey and Evaluation of the Fish and Wildlife Service Publications Program (1963). The consultant, Clayton F. Matthews, reported that the Service issued 514 new publications in 1962 and had an "active list" of 2, 943 publications. Total copies distributed in 1962 were 6. 6 million, of which 5 million were around 300 different leaflets on refuges and hunting regulations. The report is critical of the low number of copies per title, an average of 540 copies per annum per title as compared with an average of 10, 200 copies per annum per title for the U.S. Department of Agriculture.

F. Olin Capps of the Fish and Wildlife Service made a study of requests to the Service for publications reported in the same survey. Students and teachers made up 64 percent of the persons requesting publications. Capps reported that teachers make up more than half of the 36, 000 names on the Department of Agriculture's monthly-publications mailing list.

Both reports strengthen the case for a study of conservation-education materials for schools. Both studies are critical of the appearance, the content, format, illustrations, and lack of color. Our own study supports many of the recommendations made by Hammerman and by Matthews.

Collections of Conservation Materials

Five centers for the collections of conservation-education materials are known. Among the newer of these is the Carhart Conservation Collection at the Denver Public Library. Our visit to it revealed that it is a new and unsorted collection including some valuable original or prime-source materials, among them writings of Major Powell. The newest is the Pinchot Institute at Millford, Pennsylvania, too new to have been used by our project. Much was collected at the University of Michigan in connection with the National Association of Biology Teachers' conservation-handbook project. The Fresno State College collection (California), established by Elizabeth Hone (1959) in course of her study of conservation in curricula, collected primarily curricula and resource materials for teachers. Peabody College maintained a materials center for the Resource-Use Education Project in 13 southeastern states in the 40's and early 50's. The Peabody Center for several years produced annotated bibliographies.

Free and inexpensive materials have such a few years of availability that collections are obsolete, except for historical studies, within a year or two unless as much effort is expended in keeping them current as was expended to develop the initial collection. No evaluation of the materials collected at any of these five centers has been published. No study has been made of distribution systems. No survey has yet been made of all possible sponsors of conservation-education materials.

OUR STUDY

The study was divided into four major phases overlapping in time sequence: collecting materials, obtaining information on materials from producers, evaluating qualities of materials collected, and measuring teacher awareness of selected materials.

Collecting Materials

We developed an extensive list of potential sources of free and inexpensive materials on conservation and requested materials from them by mail. We subsequently visited the offices of over 100 respondent producers in 12 state capitals and in Washington, D. C., to find out how much we might have gotten had we made the entire collection by visitation and also to survey production policies and practices.

The collected materials were assigned a code number designating producer and sorted into 33 categories by audience addressed and natural resource treated. Within each sorting category, materials were arranged by producer code and publication date to eliminate duplicate copies. Format information was developed for each piece. Pieces in each category were serially numbered, the analyses sample pieces were designated, and the various analyses were started.

It took eleven quarters before these tasks were completed; there had to be considerable overlap of phases of the project. Details of the collection are discussed in Chapter II; quantity of materials produced is the topic of Chapter III; audiences addressed by the 8,000 pieces in our collection is discussed in Chapter IV; who produces materials is detailed in Chapter V; format, size, illustration, and use of color is considered in Chapter VI.

Obtaining Information from Producers

Visitations to over 100 producers elicited much information on policies and practices but relatively little specific information on quantities published or on publication expenditures. We developed a very brief questionnaire to solicit publication history, quantity published, costs, intended audience, and distributions made for each of the 1,541 pieces in the analyses sample.

Information on policies and practices obtained via visitations is discussed in Chapter V; there is answered the question, "Why are the materials produced?" Costs of material and aggregate expenditures are discussed in Chapter VII. Date distribution of all materials, publication dates of undated materials, and the active life or "half life" of materials are topics of Chapter VIII.

Evaluating Qualities of Materials

We noted use of illustrations and color among "format" items. We wanted to measure effect of these measurable aspects of appearance on appearance judgments and quality judgments of several sets of evaluators. "Format" data is discussed in Chapter VI; correlations with appearance and quality judgments are discussed in Chapters VI and XI.

We studied some seven methods for measuring relative readability, tested three, and settled on using the Dale-Chall formula. We determined a readability index for all student materials, most general public materials, and the analyses sample of teacher and manager materials. We also checked a number of high-circulation magazines and many textbooks, in all over 2,500 pieces and around 7,500 samples. Readability is the topic of Chapter IX.

We spent more than one year developing and rejecting systems for analyzing content of materials, attempting to find a system for recording content which would lend itself to Holarith sorting. We couldn't. Instead we used a rather subjective system with which we are able to say what the numbers of pieces in each crude-sorting category discuss. Description of the topic and content of the thousands of pieces in our collection is the topic of Chapter X.

We developed a system by which three sets of judges, three in each set, independently evaluated certain qualities of the materials. All judged appearance and "general quality." A set of conservation specialists judged aspects of informational quality; a set of professional educators judged educational potential; three teachers (elementary, secondary science, and secondary social science) judged teacher and student use. The system and results is treated in Chapter XI.

Measuring Teacher Awareness of Materials

The final major phase of our research attempted to measure teacher awareness and use of selected materials. We wanted to discover what conditions of teachers and of materials yielded greatest use of those materials. We sent 3,647 questionnaires to teachers in 274 schools selected by stratified random sampling in three states: Ohio, Minnesota, and Missouri. The development of the instrument and the results which we were able to develop and interpret from the better than 50 percent of the schools which responded are treated in Chapter XII.

The Volume of Data Resulting

We had planned to handle 2,000-3,000 pieces of material; we received over 8,000. We planned to visit in five states; we visited in twelve. We badly underestimated the size of the job. We planned to complete our project in three years; we did complete it in that time. We planned machine and computer handling of data, but we did not foresee needing 30,000 data cards. We managed only a part of the great array of analyses the data temptingly offer. The summary of our findings about free and inexpensive materials are the subject of Chapter XIII. Bibliography, appended charts and tables, and a listing of producers represented in our collection follow.

CHAPTER II — THE COLLECTION OF MATERIALS

We proposed a national survey of free and inexpensive printed materials on or related to conservation. We were primarily interested in such materials for use in schools or by teachers but, believing that almost the whole spectrum of "conservation" materials may be used in or given to schools, we were certain we had to consider the whole gamut of free and inexpensive materials. This included materials for most audiences and also from all kinds of producers. For these reasons we intended to solicit materials from organizations and industries as well as from agencies. (The project defines "agency" as a unit of government, "organization" as a private structure nearly always having members or voluntary supporters.)

Developing the List of Potential Producers

To expedite the development of a list of potential producers of materials, to be thorough, and to neutralize our own bias, we decided to use published directories of conservation related agencies, organizations, industrial associations, and industries. We selected two major conservation directories in existance, the Conservation Yearbook (1962) and the National Wildlife Federation's Conservation Directory (1963). From these we developed a list of 1, 389 addressees.

After about one month of work on developing the mailing list we had evidence that the directories were biased. We sorted our list by kind of office (state agency, federal agency, state and national organizations, industry, etc.) and by natural resource (soil, water, minerals, plants, animals). Out of 1, 389 addresses compiled by December, 1963, we had 236 addresses related to forests and 382 for wildlife but only 36 for minerals —less than the number of state geological surveys alone. The Conservation Yearbook emphasizes forestry and the N. W. F. Conservation Directory emphasizes wildlife and recreation. Neither, we later discovered, lists State Extension Services except as they happen to have an extension specialist in forestry or in wildlife!

We tried to balance the listing by using still more directories. The Minerals Yearbook (1962) yielded, among others, 80 coal producers extracting 1,000,000 tons or more per year; the others were minerals-extraction industries covering the range of minerals. We used the Educational Directory, Parts 1 & 4, produced by the U.S. Office of Education, to get state and national educational agencies, organizations, and foundations. With these additional sources we had developed a list of 1,492 addresses by February, 1964. They constituted the addressees of our first request mailed in March, 1964.

We mailed a one-page project description, a gummed mailing label, a postal card questionnaire, and a letter requesting two copies of each piece of "free and inexpensive printed material on conservation prepared for or given to schools." These are exhibited in Appendix A. We did not define conservation; we wanted to find out what producers and distributors include under that word.

TABLE I. Offices Contacted in Initial Mailing

State agencies	440	
State organizations	181	
State educational offices (possessions were included)	54	
State educational organizations	53	
Total state-level offices		728
Federal agencies	55	
National or regional organizations	176	
Foundations	30	
National educational organizations	85	
Industrial associations	106	
Industries	305	
Miscellaneous	7	
National or regional offices		764
TOTAL		1,492

Responses to First Mailing

By June 1, 1964, we had received nearly 2,000 pieces of mail from 656 offices, a 44 percent response. From 262 of them we received nearly 2,500 pieces of printed materials —we knew we had badly underestimated the number of materials we would have to handle! Of the 262 who sent materials, 57 said they did not produce materials themselves. Quite a number of them were timber industries who often referred to the American Forest Products Industries as their producer of educational materials. There is interest and possible significance in the percentage of response to our first request shown in Table II.

TABLE II. Response to First Request for Materials

Federal agencies	73 percent
State educational offices	70 percent
State agencies	55 percent
National organizations	50 percent
Foundations	43 percent
State organizations	40 percent
National education organizations	33 percent
Forest industries	28 percent
Mineral industries	24 percent
State educational organizations	19 percent

Amending the Mailing List

Visitations to four states by Wilma Parr the summer of 1964 and the crude sorting of materials received from first mailing gave cause for more concern over omissions from our list. We asked for lists of member industries from National Association of Manufacturers, American Petroleum Institute, and American Gas Association. We learned it is a common policy among industrial associations to treat such lists as classified; we received no lists or directories from them.

We produced a list of 220 agriculturally-related industries by using the directory issue of Implement and Tractor, "Product File Issue" (1963). It listed 2,440 manufacturers; we arbitrarily selected 30 product categories: plow, cultivator, irrigation equipment, fertilizer, etc., and finally selected only those listed for three or more product categories. Deere, Ford, and International Harvester had more than 20 out of 30; eight others had 10 to 20.

We obtained a list of state Extension Service Directors and also a list of state Soil Conservation Committees (agencies) and state Associations of Soil Conservation Districts (organizations), none of which were listed consistently in the directories used. Finally, we obtained the 10th annual Fortune Directory (1964) for a list of the nation's 500 leading manufacturers, 25 leading transportation companies, 25 leading insurance firms, and 50 largest utilities. After removing all duplicates of offices already on our lists, we made the same kind of first mailing to all of these added addressees.

First requests were sent to the 220 agriculturally-related industries in October, 1964; state Extension Service Directors and state Associations of Soil Conservation Districts were also contacted in October; the first mailing to about 550 more industries was made in February, 1965.

During all this time a few addresses were being added to our lists by suggestions or specific addresses given to us via the postal cards and in over 200 letters from respondents. We also received materials from offices we had not solicited; these sources eventually added 136 producers to our lists. Finally, one year after the beginning of the first mailing and 17 months after the start of the project, we had mailed requests to 2,272 offices.

Second Mailing to Non-responding Offices

If after 30 days no response had been received from an addressee, a second request letter, with same enclosures as for the first, was sent. First class mail was used for all requests. In several instances more than 60 days did elapse before we managed to send the follow-up request.

We got 981 responses to our 2,272 first requests. We mailed 1,291 second requests. Our total number of letters soliciting materials was thus 3,463. To nearly all volunteering offices we sent an acknowledgment, 136 of them. In addition we answered over 200 letters from producers. Finally, we sent an interim report in March of 1966 to all producers represented in our collection (685), to all "non-producing" respondents who had requested reports (570), and to around 200 individuals who had requested information from the project.

The aggregate is around 6,700 pieces of mail in connection with the solicitation and acknowledgment of around 5,000 pieces of literature —we received around 4,500 pieces by visitations, about 1,500 of which duplicated pieces already received by mail, thus a net of around 8,000 different pieces. The solicitation of free and inexpensive material on a national scale is far from an inexpensive process. The net cost to our project was over $1.00 per piece!

Results of Mail Requests for Materials

With the mailing of second requests to industries who had not responded to requests mailed during the first three months of 1965, the mailing of requests for materials was completed. According to our address files, within which there was some duplication despite our efforts to avoid it, requests had been sent to 2,272 places. In addition, 136 sources had been added by referrals and by volunteers, that is, sent to us without a written request. The address list thus totaled 2,408.

In general we got about 50 percent response (47 percent overall) to the first mailing and half of the remainder on the second, for a 71 percent total response. Governmental agencies, state and federal, exceeded all other categories as respondents: 91 and 89 percent, respectively. (These data are shown in Appendix Table D-1.)

Response from industries was markedly low; only 60 percent of 1,039 industries responded. They include the leading 500 manufacturers plus leading utilities, insurance, transportation, agricultural suppliers, mining, and forest industries. Responses from industrial and/or trade associations totaled 62 percent. The response from the commercial or private sector was only 60 percent, whereas the public sector yielded 93 percent response and the quasi-private, state and national organizations, produced a 71 percent response, the average for all addressees. On the other hand, the most attractive materials we have are from industrial associations and industries.

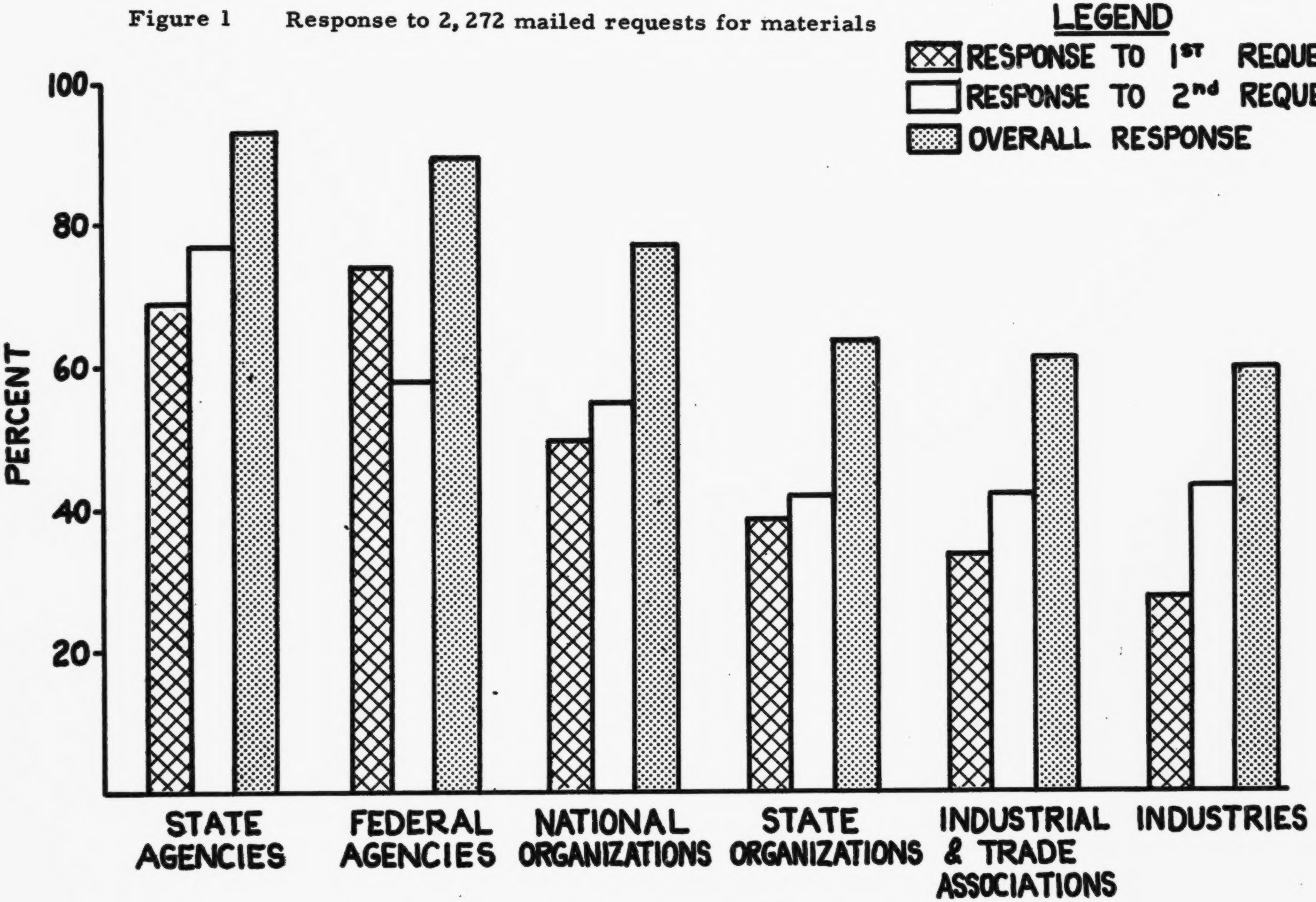
Federal agencies yielded the highest returns to the first mailing, 75 percent, with 35 responses out of 47 addresses. This left 12 for the second mailing out of which seven responded. But the resultant 42 out of 47 for 89 percent response from federal agencies left federal agencies just slightly behind state agencies for which the response was 93 percent. A recent recheck of the response record for federal agencies shows that only three agencies and department offices out of 46 did not respond; this yields a response of 93.5 percent.

An examination of Figure 1 whereon addressees are arranged in order of percent of response reveals two rather interesting facts. One, the percentage of response to a second request for materials was, on all but the instance of federal agencies where so few were left for a second mailing, higher than response to the first. (This may be a phenomenon well known to advertisers and bill collectors!) Second, industries produced the lowest response. The response from 1,039 industries was 60 percent. Industrial and trade associations were not much better. This seems contrary to general impressions about the sensitivity of industry about its image. However, it is probable that many of the industries contacted are not prepared to distribute materials.

Visiting the Producers

Realizing that mail requests by form letter is a relatively weak way for getting many materials, we planned to visit a number of state and national offices. The visits were for three main purposes: first, to find out how much more material we would get via personal visitation than we had gotten via mail; second, to learn via interview policies and practices

Figure 1 Response to 2,272 mailed requests for materials



concerning the production of printed materials; third, to obtain data on costs of publications and quantities published.

The project's first research associate, Miss Wilma Parr, began developing and testing visitation procedures by visiting 14 different agency and organization offices in Columbus, Ohio. We did not count the results of her Ohio visitation in computing the visitation-to-mail ratio because these visitations were not representative.

During the summer of 1964 Wilma Parr visited state agencies and a few state-level organizations in Michigan, Indiana, Missouri, and Kentucky. In Kentucky she got only 54 pieces while we had gotten 31 by mail (1. 7:1); but in Indiana she got much, 270 pieces from offices from which we had gotten 49 by mail (5. 5:1). The mean visitation-to-mail ratio for the four states was 3. 5:1 (Appendix Table D-2).

Our second research associate, James Rinier, made visitations to six more states: Wisconsin and Minnesota in December of 1964; New York, Pennsylvania, Georgia, and Tennessee in June of 1965. Charles Dambach visited five Colorado agencies in July, 1965. Rinier, Dambach, and Carl Johnson spent 15 man-days visiting 24 federal agencies and 15 national organizations in Washington, D. C., in March of 1965.

These visits constituted our "depth search" for materials. Excluding Ohio we spent 41 man-days visiting 25 federal agencies, 15 national organizations, and around 60 state agencies and organizations, around 100 producers of conservation materials. From them (counting Colorado which is not included in Table D-2) we received 4, 476 pieces of material. From the same producers we had received 1, 315 pieces by mail. The resultant ratio is 3. 4:1, i. e., 3. 4 times as much by visitation as by mail.

An interesting budgetary statistic is that visitation yielded slightly more than 100 pieces per man-day (109). It thus seems less expensive to collect materials by personal visitation than to do so by mail!

Handling the Materials Received

As materials were received we went through a set of steps designed to file the piece, give it a serial number, and eliminate duplication. These steps did not always follow the sequence listed but they were eventually accomplished for every one of the nearly 10, 000 pieces we received.

1. Check the identity of the producer, record the producer code number from our address file on the piece, record publication date, and, if producer was differ-

ent from sender of the piece, record the sender among distributors of the publication.

2. Stamp the piece for "visitation" or "volunteered" if received by other than response to mailed request.

3. Stamp date received on the piece.

4. List the title and date received in the file folder for the office from which it was received.

5. Send letter of acknowledgment to the sender.

6. Place the piece in its "crude-sort" category.

7. Arrange it in its crude-sort category by producer code number and among others of that code by date of publication.

8. If it duplicates a piece already there, record the new source as a distributor and shift the piece back to the producer file. If duplicated there, shift to duplicate files.

9. If it is not a duplicate, give it a serial number.

10. If the serial number is evenly divisible by three or by six, depending on audience category, put a sample signal (blue tag) on it.

Sorting the Materials

We established a two-axis sorting scheme for the materials: (1) apparent intended audience, and (2) subject. We used four audience categories: teachers, students, general public, and resource managers and technicians. Educational leaders or workers of any level, e. g., youth organization leaders, are included with teachers. On the subject axis we used a column for each of the following: soil, water, minerals, plants, animals. To these five we had to add three more: general, for any material that dealt with two or more of the specific subjects; miscellaneous, for other resources such as air, human, social, etc., plus anything that did not fit the conventional subjects; and recreation, because we found so much material that had that emphasis without much to say about animals or plants or water or land, the physical basis for outdoor recreation. (See Figure 2.)

The sorting scheme created 32 categories. We soon created a 33rd for bibliographies, publications lists, and publications advertisements. Much later we set up a parallel but separate 32-category scheme for sorting publications lists, etc. These 535 publications were not serially numbered or ever included in the analyses sample.

AUDIENCE	SUBJECT								AUDIENCE TOTALS
	Gen	Soil	Wat	Min	Plnt	Anim	Rec	Mscl	
Teachers	01	02	03	04	05	06	07	08	
Students	11	12	13	14	etc.	The cell number is used as first two digits of serial number assigned to a piece.			
Public	21	22	23	etc.					
Managers	31	32	etc.						
SUBJECT TOTALS									GRAND TOTAL

Figure 2 Sorting scheme for materials

Serial Numbering

We used a numbering machine to stamp serial numbers on each piece in the working collection. We numbered the publication itself, the master data card attached to the piece, and, if the piece became part of the analyses sample, the blue signal card stapled to the master data card. (See Appendix A-6 for copy of the data card attached to every piece.)

audience	subject	serial no. in category
0	1	0001

The first two digits of the number indicated the sorting category, the first digit showing audience, the second showing subject. Thereafter four places were needed to sequentially number (1...n) the pieces in each sorting category. A never-ending problem resulted from the continued inflow of more pieces and continuing discovery of sorting errors or duplications.

Selecting the Analyses Sample

When it had become apparent we would have at least two times and perhaps three times as many titles as planned for in the project proposal, we knew we could not subject every piece to each of the several analyses planned: readability measurement, format coding, getting information from producer on costs and on copies printed, and evaluation by several sets of judges. We therefore decided that most analyses would be done on only a randomly selected sample.

The numbers of pieces for teachers and for students were much lower than for general public and for managers. We decided to encode format information for all titles, do readability measurements on all student pieces and all in some categories of general public materials. For all other analyses we decided on a one-third sample of teacher and student materials, and a one-sixth sample of all other materials. Since the materials were randomly arranged within each sorting category (arranged by producer code and by date within materials from a producer), we attached a marker tag to each piece for which the last four digits of its serial number was evenly divisible by three or by six.

It happened that these pieces, because they were being closely studied in many analyses, were often shifted. That is, it was discovered that the piece had a duplicate, or that its producer was other than the one credited, or that it belonged in some other category. A shift would cause a number to be vacated for the category from which the piece was removed. Vacated numbers were listed and reused if pieces were shifted into a category. The ins and outs tended to balance so that the final sample closely approaches the 1/3 and 1/6 intended. (See Appendix Table D-3.)

Mechanics of Filing

We used cardboard letter file boxes to house the collection and kept the boxes on steel shelving. We used more steel shelving with labeled spaces to simply stack materials until they could be processed to the file boxes. Open shelving also served as repository for batches of materials for analyses. We were sorely pressed for space during all the second and half of the third year with 156 feet of shelf space.

For each respondent a file folder was prepared and placed in one of three sets of files: (1) does produce materials, (2) does not produce but want results or furnished information on materials, (3) negative respondent. In each folder for the producers was placed a typed list of titles received with date and avenue of receipt. This also was the file for all correspondence with or information about the producers, e. g., visitation reports.

TABLE III. Distribution of Collection by Subject Treated and Audience Addressed*

AUDIENCE	SUBJECT								AUDIENCE TOTAL
	General	Soil	Water	Minerals	Plants	Animals	Recreation	Mscl.	
Teachers	252	10	24	21	65	47	24	193	636
Students	114	58	26	47	189	223	32	133	822
Public	255	293	384	133	706	986	1, 030	490	4, 277
Managers	159	142	292	360	404	157	122	153	1, 789
SUBJECT TOTAL	780	503	726	561	1, 364	1, 413	1, 208	969	7, 524

*Not including publications lists, etc.

TABLE IV. Distribution of Publications Lists, Bibliographies, and Publication Advertisements

AUDIENCE ADDRESSED	SUBJECT								AUDIENCE TOTAL
	General	Soil	Water	Minerals	Plants	Animals	Recreation	Mscl. *	
Teachers	63	2	3	5	1	2		55	131
Students								1	1
Public	110	2	21	7	3	22	20	123	308
Managers	33	1	1	28**	7	20		29	119
SUBJECT TOTAL	206	5	25	40	11	44	20	208	559

* Miscellaneous includes 52 materials advertisements, 45 of which are addressed to general public, 5 to teachers.

** Nearly all from Bureau of Mines, some from state geological surveys.

We had requested two copies of each publication with the intent of putting the second copy in the producer folder. Most sent us but one copy so this file did not become complete enough for any systematic analyses.

We had requested materials published in the years 1959-1963 inclusive. These dates were generally disregarded. We arbitrarily eliminated pieces published before 1950 from the working collection. We tallied them for date and category and filed them separately as "materials predating 1950." We tallied only 24 pieces in that file in August of 1964 when we had 3, 600 pieces. We ended up with less than 50 pieces; these are not included in the charts which follow.

The Collection

Table III presents the number of titles in each sorting category, the subtotals by audience and by subject, and the grand total, 7, 524 titles. There are more pieces than titles because a periodical is counted as one title regardless of the number of issues in the collection. Table IV presents a parallel set of tallies for 559 publications lists, bibliographies, and materials descriptions or advertisements received. The sum of these two tabulations is 8, 083.

We ceased adding materials to our working collection after November 30, 1965. Since that time we received several hundred more publications, most of them dated 1964 and 1965 plus a few for 1966. We have not been able to make any tallies or analyses of these materials from 200-300 different producers. We can only estimate that we have somewhere between 8, 500 and 9, 000 titles of free and inexpensive printed materials, most of which are related to conservation.

CHAPTER III — HOW MUCH MATERIAL IS PRODUCED?

We have a substantial collection of free and inexpensive materials on conservation but we have only a sample, some fraction of the total number of such materials. How much such material is available in any given segment of time? How much would one have if one had it all?

We developed several sets of data to support estimated answers to this question. The major set is developed by our "depth search," the visitation to producers in twelve states and Washington, D. C. A second is based on records and reports from some visited producers on numbers of titles produced per year and on numbers of active titles. A third is a ratio developed from examining publications lists of producers and a count of materials received from those same producers. These yield estimates ranging from 17,000 to 66,000 "active" titles.

Extrapolation from the Visitations

We visited in person state conservation agencies' offices, Extension Service offices, state Department of Education and a variety of other offices in twelve states. This was described in Chapter II. From the agencies and organizations visited we had received 1,305 titles by mail; we received 4,436 titles by visitation, a ratio of 3.4:1 (Appendix Table D-2).

With rare exception we received or could have received duplicates of the items mailed by those same producers. These are counted as received by visitation in calculating how much one may receive via personal visitation in comparison to using the mails. However, only if a piece obtained by visitation did not duplicate one received by mail was it counted as added by visitation. The numbers of pieces added to the collection by means of visitation is:

4,436 less 1,305 = 3,131

The total received by mail is thus the grand total less that added by visitation:

8,083 less 3,131 = 4,952

If we multiply the visitation-to-mail ratio by the total received by mail, we get a calculated number of total active publications:

$$3.4 \times 4,952 = 16,837$$

This we round off to 17,000. That is our minimum extrapolation and one from which we might state that we managed to collect nearly one-half of all conservation-related titles available in the whole country.

Reports from Producers

The U.S. Fish and Wildlife Service report (1963) previously cited states that that agency had 2,943 titles on its active list and a publication rate of 514 in 1962. The U.S. Bureau of Mines and the U.S. Geological Survey reported to our visitor a combined publication rate of over 2,000 titles per year. The Department of Agriculture reports 3,400 active titles and a publication rate for the entire department of 600 titles per year. We were unable to obtain or develop a figure for the entire Department of the Interior but the total for the named portions of the two principal conservation-related departments of federal government is over 12,000 active publications and a publication rate of around 3,000 per year.

Of all materials in the collection, other than publications lists, 18 percent or 1,364 pieces is from the above federal agencies (Appendices B and C). That is only one-ninth (11.3 percent) of the calculated figure for active titles for those producers: An extrapolation from this fraction, not counting publications lists and bibliographies, yields an estimate of 66,000 active titles!

$$\frac{11.3}{100} \times 7,524 = 66,584$$

Counting from Publications Lists

A check of the publications lists of ten state Agricultural Extension Services revealed an average slightly over 300 current or "active" extension publications per state. A count in those same ten lists of what might have been sent to us as conservation or conservation-related material yielded an average of over 100 per state. Extrapolation would yield over 5,000 conservation materials from the 50 state Extension offices alone!

The Minimum Estimate

We had written to 2,272 potential sources. We have materials from 773. We do have large numbers of materials from the conservation-related federal agencies but we can not claim to have gotten a positive response from all producers of these materials. For example, while all but one of the 50 state Extension Services responded, we have no materials from eight of them. Certainly all Extension Services produce conservation materials! This indicates that our calculations for estimates of total active titles is low because we have not developed or provided the multiplier to correct for producers not represented in the collection.

We believe our estimate to be conservative even though the number is much larger than that we guessed at the start of the project. We estimate there are over 20,000 active titles of free and inexpensive printed materials on conservation. We are certain, in view of the short life of much of this material (Chapter VIII), that the current rate for the publication of new titles is at least 6,000 a year.

CHAPTER IV — FOR WHOM IS MATERIAL PRODUCED?

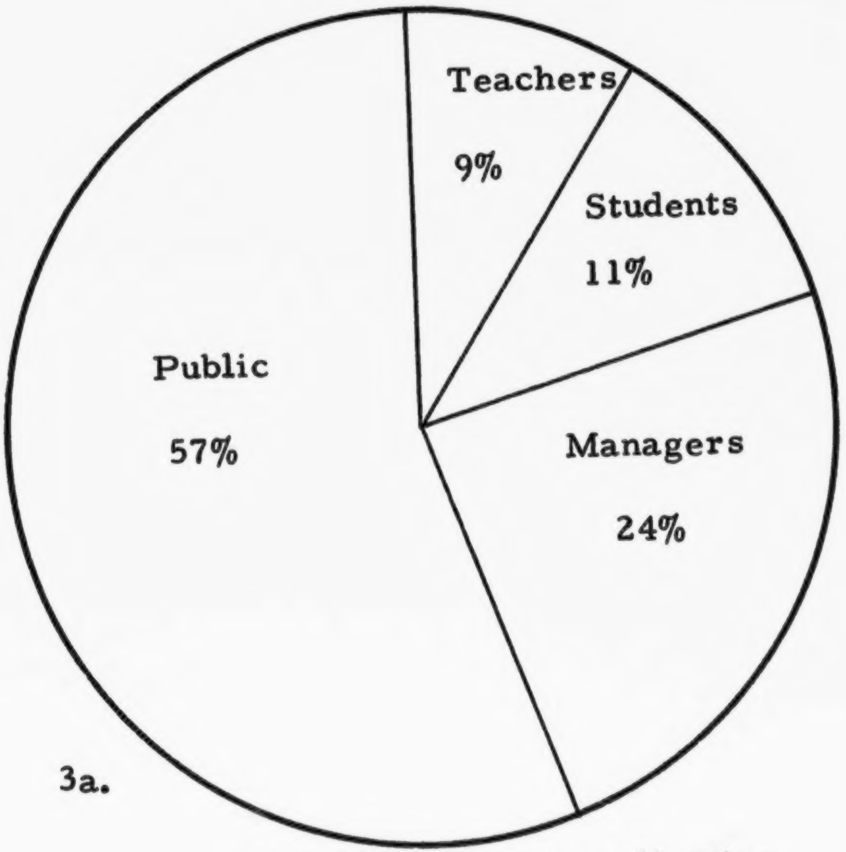
We did not set out to collect all materials available in the collecting year, March, 1964 - March, 1965; we were requesting only that portion of total materials "prepared for or given to schools." We did expect that we would get quite a number of materials for the general public and a few of the materials addressed to resource managers, farmers, and woodland owners in particular.

Most of our Material is for the General Public

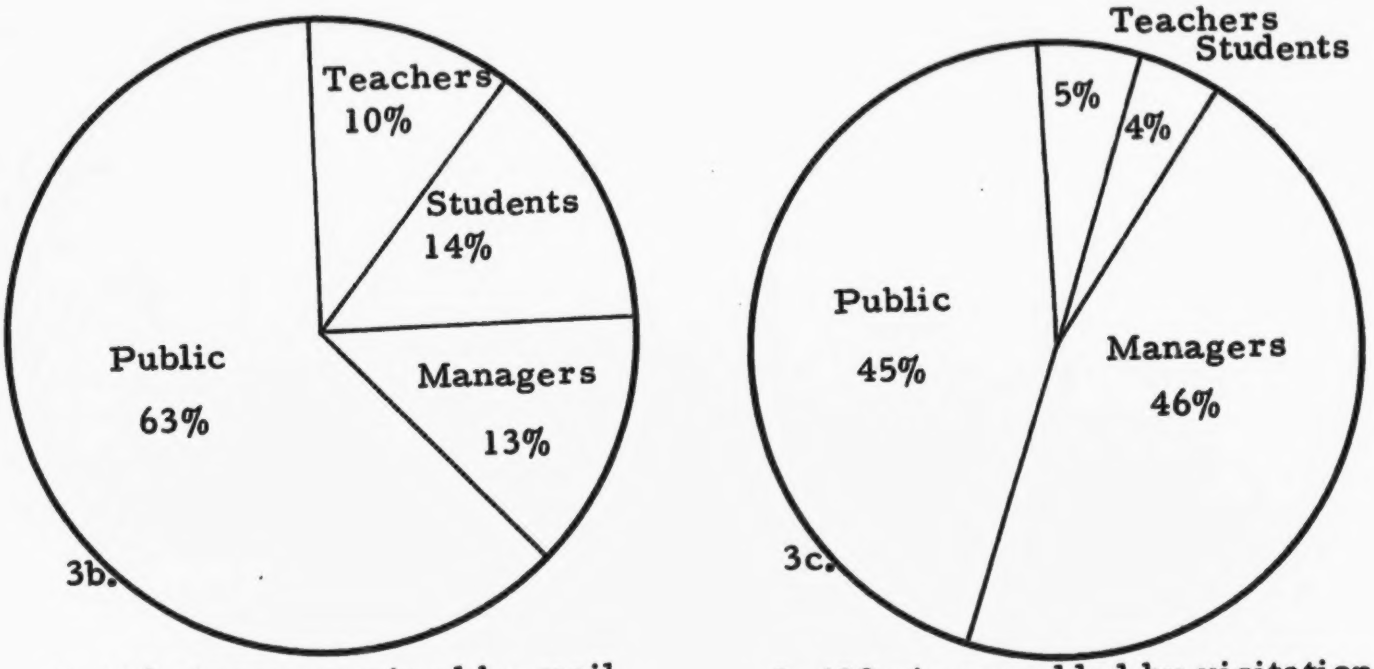
Most of the material we have obtained is addressed to the general public. (See Figure 3.) About one-fifth of the materials we have received can be said to have been prepared specifically for conservation education in schools. This is about evenly divided between materials addressed to teachers —this includes materials addressed to youth-organization leaders— and materials addressed to students. Roughly twice as many pieces in our collection are addressed to managers as are addressed to either teachers or to students and six times as many pieces are addressed to the general public. This is as was hypothesized; most materials are "shotguns" instead of "rifles," that is, they are addressed to everybody. True, many may be addressed to segments of that public but they are usually rather widely and indiscriminately distributed. Witness the fact that we received them when requesting materials useable by schools.

We had expected that the proportion of technical materials, materials addressed to resource managers, would be higher. We believe that in the total of over 20,000 titles the percentages of materials addressed to resource managers is higher than the 24 percent in our sample. We believe that our request for "conservation materials prepared for or distributed to schools" was a selective factor causing the elimination of much of the technical materials.

When we Holarith-sorted the entire collection's 7,524 titles (omitting publications lists, etc.), we find that the more technical materials are 3 1/2 times more abundant among pieces added to collection via visitation than among pieces received by mail. (Compare Figure 3b to 3c.) We asked for materials schools might use in both instances but



All 7,524 pieces in collection



5,116 pieces received by mail

2,408 pieces added by visitation

Figure 3 Distribution of materials in the collection by audience addressed

we received much more material addressed to managers and technicians during visitation than had been mailed to us.

Most of our Technical Material Obtained by Visitation

Table V shows the percent of all materials contained in a sorting category added to that category by visitation. Table III showed total titles in each category. Appendix Table D-4 shows the number of "Visitation" pieces in each category counted by Holarith sorting of data cards. Data cards contained a signal "V" for visitation if the title was added to the collection by visitation; in visiting offices we received many pieces duplicating titles already received by mail. This is important in interpreting our data or examining our collection: pieces marked "Visitation" were added that way; visitation plus mail is total receivable by visitation.

One-third (32.0 percent) of total titles were obtained by visitation. (See Table V.) One-fifth of teacher materials and one-eighth of student materials (20.1 and 13.0 percents, respectively) were received by visitation. One may say that we did not greatly increase student or teacher materials by visitation. However, three-fifths (61.5 percent) of our technical material was added by visitation. These data indicate that there is much more technical material, that,in the total of active free and inexpensive materials related to natural resources,more, much more, than the 24 percent indicated by our sample is technical material.

These data suggest a cause for our getting more technical materials via visitation. If there is more technical material than materials addressed to the other audiences, and we find that this is the case, then that mailed may have nearly covered the school and public audiences while the larger technical area had been only skimmed for a few of its more "general interest" pieces.

Agencies Report Most Materials Technical

Clayton Matthews, in the Survey and Evaluation Fish and Wildlife Service Publications (1963) previously mentioned, reports that a little over 2,350 of that agency's 2,943 active publications are scientific, technical, or statistical, "not of general interest." We received 98 pieces out of the 2,900. There is much material there not at all useful for schools; at least 80 percent of FWS active materials is technical. We call material telling farmers how to plant trees, fertilize corn, or prevent erosion, technical; it is material addressed to managers; it is not material of general interest.

TABLE V. Percent of Total Titles Obtained by Visitation

	SUBJECT								
AUDIENCE	Gen	Soil	Wat	Min	Plnt	Anim	Rec	Mscl	AUDIENCE TOTALS
Teachers	15.4	30.0	8.3	14.3	12.3	6.4	41.7	31.1	20.1
Students	9.6	20.7	11.5	10.6	6.9	4.9	9.4	36.8	13.0
Public	28.6	49.1	26.8	21.8	24.6	19.0	35.2	18.8	25.1
Managers	42.1	47.1	44.2	81.4	84.2	43.3	43.4	53.6	61.5
SUBJECT TOTALS	24.3	26.8	32.6	58.8	39.2	19.0	35.5	29.2	32.0

The List of Available Publications of the United States Department of Agriculture (1963) contains around 3,400 titles. A physical count of one column on each of the first 50 odd-numbered pages tallied 618 titles. The apparent audience distribution as we might have sorted them yielded:

Teachers	5.1 percent
Students	7.1 percent
Public	16.0 percent
Managers	71.8 percent
Publications lists, bibliographies, etc.	1.8 percent

A very high percentage is technical, i.e., addressed to managers, scientists, economists, and technicians. However, even much of that we would classify as public is quite technical in nature, e.g., materials for homemakers on food preparation. However, most of the material sent to or given to schools is "general interest" materials, materials addressed to the general public or large segments of it.

The fact that most material given to schools is "general interest" material is further supported by the audience distribution of materials received from each producer group given in Table VI. For each producer group the largest audience segment is circled. It is general public for all except state departments of education, educational organizations, and federal agencies. In the case of educational offices no explanation is needed; they would not be expected to produce much material for the general public. For the federal agencies the materials for managers account for 45.6 percent of the group total, general interest materials for 40.5 percent. However, we visited 24 out of the 34 federal agencies, including all of the major producers of conservation-related materials. This swelled the number of technical materials markedly. In view of this we conclude that the material given to schools will be largely general-interest materials, that is, materials for the public.

But our collection is not representative of the total of conservation-related materials produced. We have already given evidence of this from the examination of publications lists from Extension Service offices and from federal agencies. We are certain that the same distribution of materials is generally the case for all state agencies, that is, most of the materials they produce is for managers and technicians. Governmental agencies, with few exceptions, have as the primary responsibility the servicing of some special group or interest; printed materials for the general public or for schools will be produced only if the agency believes that the achievement of its objectives will be facilitated thereby. It is this consideration which leads to the production of some materials for the public for the purpose of advertising the agency; the production of such materials comes under the heading of "public relations."

Organizations, on the other hand, have different kinds of objectives than do agencies. They commonly need recruit and hold membership. They were created to influence some segment of the public. Most of the materials produced by organizations will be of general interest even when addressed to the organization's own segment of that public (members). Some organizations do produce materials for managers but they more commonly distribute or refer to technical materials produced by governmental agencies. The exceptions to this generalization are the professional societies, organizations of technicians.

Governmental agencies (state and federal) produce greater numbers of titles than do all other producer groups combined. Thus the fact that the organizations groups produce more materials for the general public than for the others of our audiences does not shift the audience distribution far from the pattern set by governmental agencies. We cannot develop an index or a formula by which we can tell what percent of all free conservation materials is for each of the four audiences but we hypothesize a percentage distribution as follows: managers, 65; public, 25; students, 6; teachers, 4.

We must conclude that more free and inexpensive publications related to natural resources are for managers and technicians than for the public at large; we also conclude that "general public" materials are more often addressed to segments of the public than to the whole public, e.g., housewives, voters, teenagers, fishermen, gardeners, etc. Materials for teachers and students make up a very small part of the the total titles related to conservation, certainly no more than 10 percent.

Materials for the public will constitute at least one-half of free and inexpensive materials given to or distributed to schools.

CHAPTER V — WHO PRODUCES CONSERVATION MATERIALS?

The project contacted over 2,400 offices. Some duplications occurred so we did not actually contact that many different agencies, organizations, and industries. One example of duplication is that of the regional offices of the U.S. Forest Service; we eventually included them with the parent agency, C0005 in our producer code. Another case, often repeated, came from directory listings of divisions of departments such as state conservation departments. We were unable to resolve this problem; i.e., in some states the divisions, such as forestry and wildlife, act autonomously in producing materials while in other states this activity is coordinated through one office for the department.

We received responses from more offices than we have materials from. Some told us they do not produce materials or at least not for schools. Some replied that they do produce materials but sent us none. Still others sent us their publications list asking us to choose materials wanted; we would then ask them to treat us as they might treat a school administrator from their own state who had come to their office asking for examination copies of publications which schools might use. If they sent such, they are among the producers listed in Appendix B and tabulated in Appendix C. If they did not, we do have the publications list, but we did not list producers for these 559 pieces.

The response record, discussed in Chapter II, does not tell us who produces conservation-related free and inexpensive printed materials which might be used in schools. We received responses from 1,753 offices but only 685 of these appear on our tally of producers for some one of the reasons mentioned above.

Four-tenths of Potential Producers Sent Materials

We have materials from 685 producers. In addition, 88 others sent publications lists. Those lists made it apparent that the majority of these 88 produce many pieces of pertinent material. Estimating that at least 70 of these 88 produce conservation-related materials, we can say that there are at least 755 (685 + 70) producers of conservation materials. This figure is 42 percent of the total number who responded to our requests.

If the same ratios were to hold for the non-respondents, another 260 producers would be added, bringing the total over 1,000. The 40 percent would probably not hold but there are at least two factors which would increase total numbers: one, many of the offices from which we got negative responses do produce some relevant materials; two, we have not contacted all potential producers and we did not try to contact offices below state level. There are certainly at least 1,000 different producers of free and inexpensive printed materials related to conservation.

To answer the question, "Who produces conservation materials? we tried to contact all potential producers. On all materials received we noted who had produced each piece and recorded that by use of a code letter and number from our address files. This process, as stated earlier, added 136 cards to our address files. We produced a basic data card for each title. Each card recorded sorting category, serial number, whether received by visitation, producer, date of publication..., and title. (See Appendix G for code sheets for data cards.)

With that data card, machine-sorting informed us how many titles had come from each producer and how many for each audience. The detailed tally showing numbers of pieces for teachers, for students, for general public, for managers, and the total for each producer code number is Appendix C. The identity of each producer is given in the list of producers which is Appendix B.

How Many Offices Produce Conservation Materials?

In our collection of 7,524 titles other than publications lists, 685 producers are represented. State-level agencies make 37.6 percent of the total list. (See Table VI.) They collectively account for 3,754 titles, 50.0 percent of the collection. Federal agencies, 34 of them, comprise only 4.9 percent of the number of producers but tallied 25.8 percent of all titles. Governmental agencies, state and federal, constitute 42.6 percent of the list of producers and yielded nearly 76 percent of our materials. Hence, it can be said that government agencies produce three-fourths of all titles of conservation-related materials. However, government is not the producer of either great numbers or high-cost materials.

Thereafter no group of producers accounts for more than six percent of our collection. In numbers of producers, industries rank second with 143, accounting for 6.1 percent of the titles. State organizations rank next in number, 72, but are exceeded in titles by 52 industrial associations. (Tables VI - VIII are developed from summary tables in Appendix C.)

TABLE VI. Numbers of Producers and Titles per Group

Producer Group	Code	Number of Producers	Number of Titles from the Group	Percent of Total
State agencies	A	258	3,754	50.0
State organizations	B	72	316	4.1
Federal agencies	C	34	1,941	25.8
National organizations	D	85	458	6.1
State depts. of education	G	32	196	2.6
State educa. organizations	I	2	3	0.1
National educa. orgnztns.	J	7	28	0.4
Industrial associations	K	52	356	4.8
Industries	L	143	457	6.1
TOTALS		685	7,509	

State-level Offices Produce More Titles

State-level offices (agencies and organizations: A, B, G, and I) account for 57.2 percent of all titles in the collection. Federal agencies, national organizations, industries, and industrial associations accounted for the remaining 42.8 percent. (See Table VII.) State-level offices seem the more prolific but when one tallies numbers of titles per producer a slightly different picture develops. Federal agencies average 57 titles per producer in our collection. We have already pointed out that the active list of publications for many federal agencies run from hundreds to several thousand. State agencies averaged 14.6 titles per agency in our collection, roughly one-fourth of the average for federal agencies. (See Appendix Table C-5.) One can say that this is surprisingly high in relation to that from federal agencies or that the average for federal agencies is surprisingly low in view of the very large number of titles they produce. Either interpretation is possible but it is also possible that each figure represents the same fraction of the total of relevant materials produced by each group of agencies. More will be said about quantities produced in Chapter VII ; this is inserted here to say that governmental agencies are the major producers of free and inexpensive printed materials on conservation.

Who Produces Materials for Schools?

All of the producer groups have some materials for schools. Of the 685 producers represented in the collection only 163 sent us materials for students and only 185 sent us materials for teachers, 23.8 and 27.0 percents respectively. (Appendix Table C-3.) In Table VIII is shown

TABLE VII. Audience Distribution of Materials from Each Producer Group

Producer group	Code	Percent of material by audience			
		Teachers	Students	Public	Managers
State agencies	A	5.1	11.4	67.2*	16.2
State organizations	B	10.8	19.9	51.3	18.0
Federal agencies	C	5.4	8.4	40.5	45.6
National organizations	D	16.1	8.5	49.3	25.8
State Depts. of Public Instruction	G	71.9	8.2	18.9	1.0
State educational organizations	I	100.0			
National educational organizations	J	78.6	3.6	14.3	3.6
Industrial associations	K	17.7	12.1	56.5	13.8
Industries	L	6.1	11.4	71.9	10.6
ALL		8.8	10.7	56.8	23.6

*The largest audience segment for each producer group is circled.

TABLE VIII. Percent of Titles for Each Audience by Producer Group

Producer Group	Code	Audience Class			
		Teachers	Students	Public	Managers
State agencies	A	29.0	53.3	59.1	34.4
State organizations	B	5.1	7.8	3.8	3.2
Federal agencies	C	15.8	20.2	18.4	50.0
National organizations	D	11.2	4.8	5.3	6.7
State depts. of education	G	21.3	2.0	0.9	0.1
State educa. organizations	I	0.5	0.0	0.0	0.0
Natl. educa. organizations	J	3.3	0.1	0.1	0.1
Industrial associations	K	9.5	5.3	4.7	2.8
Industries	L	4.2	6.4	7.7	2.8

the distribution of the materials for each audience among the producer groups. More than half of the materials for students, 53.3 percent, came from state agencies; only one-fifth came from federal agencies and there is no other significant producer group in terms of numbers of titles produced. We will see later that industrial associations and national organizations, each of whom has about five percent of the titles in our collection, outshine all other producers in number of copies produced per title; several of the million-plus titles are for schools.

State agencies are the leading producers of materials for teachers, again in terms of numbers of titles. They are followed closely by state Departments of Public Instruction, 29 percent and 21 percent respectively (still Table VIII.) Three other groups account for 10 percent or more of the titles for teachers: federal agencies, 16 percent; national organizations, 11 percent; and industrial associations, 10 percent.

Most Producers Publish Very Few Titles

Two-thirds of the producers sent only one to five pieces. In fact, if one also counts the 88 more who only sent us publications lists, 70 percent sent us fewer than six titles. From each of 231 producers we received but one piece; from another 102 but two pieces. Most producers produce very few titles of conservation materials. (See Appendix Table C-2.)

Who Prints More Copies?

The mean number of copies per title for national-level producers is markedly greater than for state-level producers. The mean for the former is 320,000; for the latter, 47,500. (See Table IX.) National-level producers average seven times as many copies per title.

It is not, however, federal agencies that bring up the national average. Their publications average 163,000 copies per title, below the overall mean of 171,000. The high numbers printed for a few materials in our collection produced by national organizations and industrial associations cause the means for them to be over 900,000 and nearly 800,000 respectively.

TABLE IX. Mean Copies per Title for National-level Compared with State-level Producers

Producer Group	Code	Titles with Data on Total Copies	Total Copies	Mean No. of Copies per Title
Federal agencies	C	209	34,018,200	162,767
National organizations	D	48	33,520,900	906,685
Natl. educa. organizations	J	1	3,000	--
Industrial associations	K	34	26,491,000	779,147
Industries	L	29	8,847,100	305,072
National-level		321	102,880,200	320,049
State agencies	A	354	17,545,700	49,564
State organizations	B	20	319,900	15,995
Depts. of Public Instrctn.	G	15	549,100	36,607
State educa. organization	I	1	100,000	--
State-level		390	18,514,700	47,473
All producers		711	121,394,900	170,738

Why Do They Produce Materials?

There are quite a number of reasons, most of them laudable, for which free materials are produced. They service a demand. They are often a convenient and less expensive way of answering requests for information. They may sell ideas. They may influence an audience in a way desired by the producer.

There are quite a variety of things to "sell" other than products of industry. Agencies and organizations have ideas, beliefs, programs, etc., to sell. This is certainly a common reason for the production of free and inexpensive materials.

There is yet another objective. Producers would rarely if ever state this in a publication but agency and organization people freely admitted this reason to our visitors. That reason is to sell the agency or organization, i. e., to win favorable notice for the producer. Whether or not this is judged an acceptable purpose, our study of materials' characteristics indicates considerable lack of efficiency at achieving it.

CHAPTER VI — WHAT FORMATS PREDOMINATE?

Librarians are not usually elated to receive collections of free and inexpensive materials. They are hard to handle, a real problem to store, and there may be still other reasons. An important factor in their reluctance is the physical nature of the material; it is flimsy, it comes in all sizes and without much thickness. That it lies flat is fine for the teacher who has a few pieces, but piles of pieces laid flat are a problem.

Some of these characteristics of free and inexpensive materials which make them an anethema to the librarian may have positive value to the individual. They are thin; they lie flat; they will go into files, folders, notebooks, etc. We therefore steered clear of evaluating size and shape. Format analyses for us was to quantify certain other aspects of appearance.

Procedure for Classifying Format Characteristics

Each piece of material was classified according to type, pages, illustrations, and use of color. The format classification includes the following characteristics: (1) type of publication, i. e., books, booklets; (2) kind of cover; (3) number of pages; (4) illustration; and (5) use of color. (See the listing of the "Format Code" below; data card encoding is in Appendix G-3.)

In the analyses of format and the presentation of data in the tables to follow, several of the sub-characteristics of the classification were combined. For instance, under the cover of classification, the code numbers one and two (cloth and paper) were combined to form the heading "with" cover; and similarly code numbers three and four (selfed and none) were combined under the heading "none," meaning no cover. Sub-characteristics were also combined for illustration and color classifications.

FORMAT CODE

Format
- (1) Books, 81 or more pages

(2) Booklets, 16-80 pages
(3) Periodicals
(4) Packets
(5) Charts, maps, posters
(6) Folders or folded sheets, no cover, and always recorded as two pages only
(7) Single sheets, whether flat or folded, counted as one or two pages, depending on whether or not back of sheet is used
(8) Pamphlets, 5-15 pages
(9) Miscellaneous, i.e., anything other than foregoing

Cover
(1) Cloth or "hardback"
(2) Paper
(3) "Selfed," meaning cover is of same stock as body
(4) None

Pages
001 upward, paginated pages for book or booklet, average total pages for periodicals, total pages for selfed publications, total pages less cover for covered booklets and pamphlets, number of pieces of material in case of packets

Illustration
(1) None
(2) Photos
(3) Drawings
(4) Both drawings and photos

Use of Color
(1) Black only
(2) One color other than black
(3) Two colors
(4) Three or more colors
(5) True color

The Material Analyzed

We compared the distribution of the format characteristics for the sample pieces and the whole group to see if the sample was adequate for analyzing format characteristics. The percentage values for two audiences differed very little; relative ranks were the same. (See Figures 4 and 5 and Appendix Table D-5, upon which they are based.) The analyses reported here were based on the 1,541 titles in the sample.

Characteristics of the Materials

In general, most of the teacher and manager materials consist of booklets, whereas most of the student materials consists of sheets and the public materials consists of folders. Table IX shows the percent-

Figure 4 Comparison of sample with the whole on types of student materials

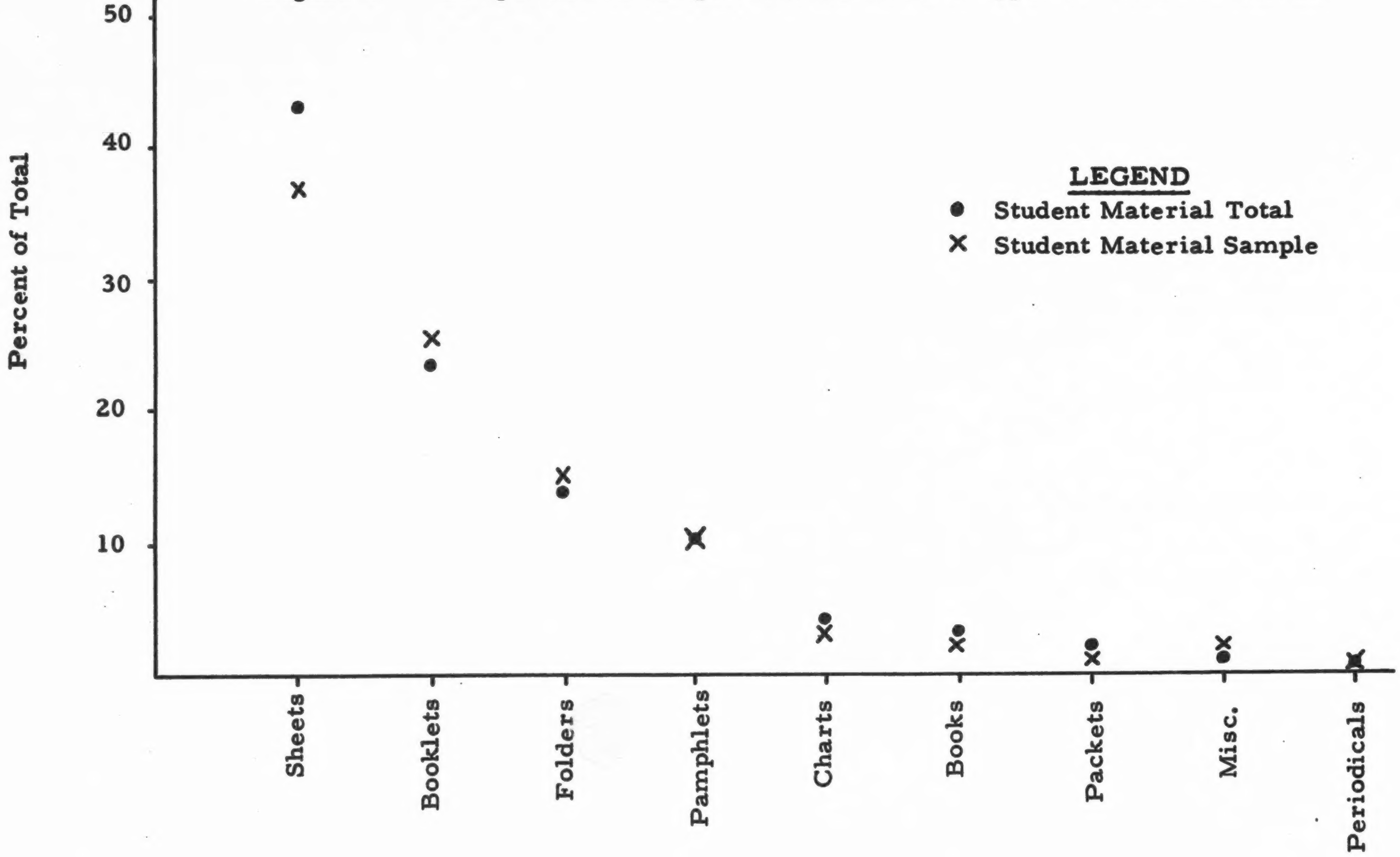
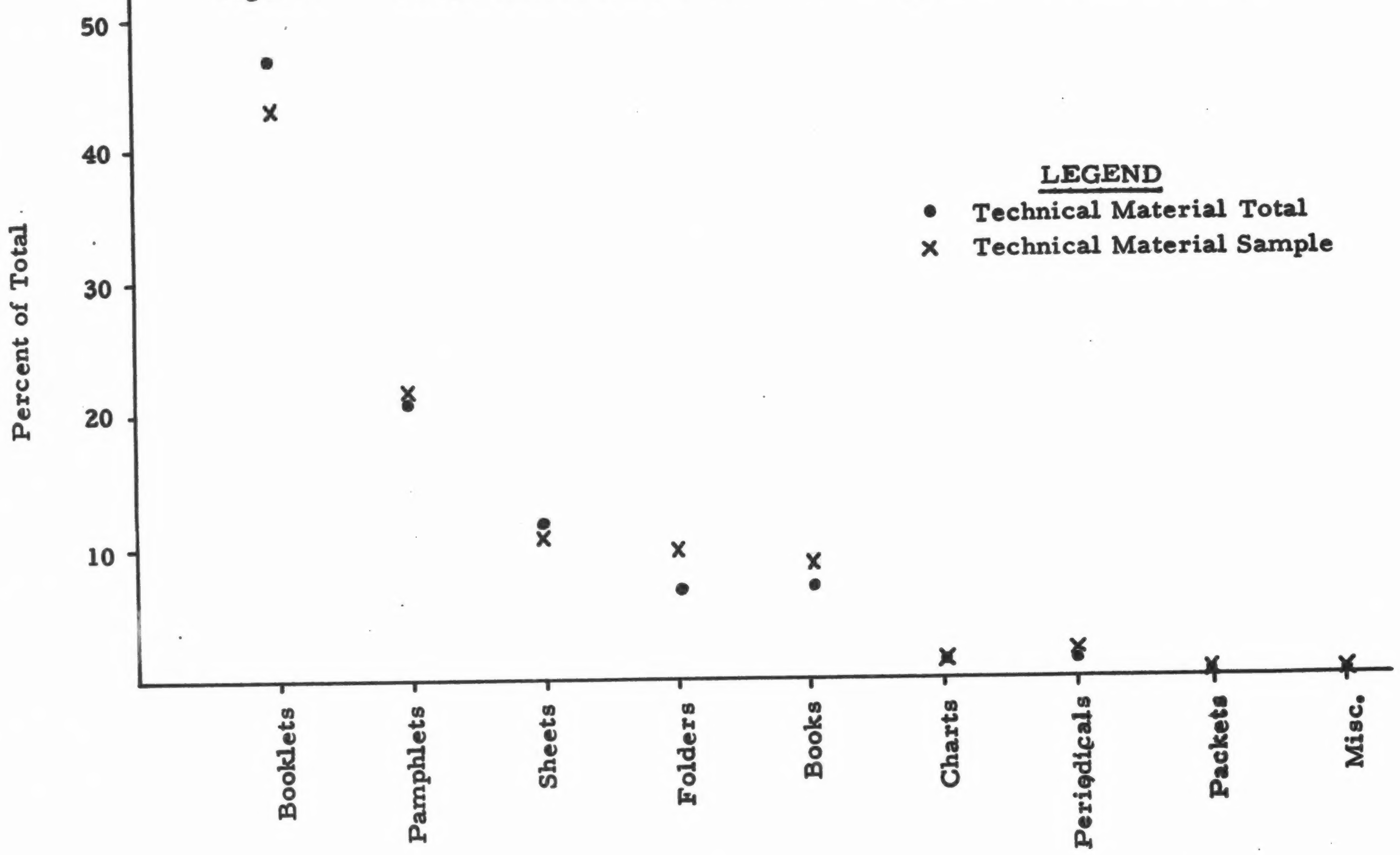


Figure 5 Comparison of sample with whole on types of technical materials



ages of the material for each format classification in the whole sample. Booklets, folders, and sheets comprise 25.6, 23.8, and 21.9 percent, respectively, of the analyses sample; this is 71.3 percent of the whole sample.

Eighteen percent of the material has a cover. About 76 percent of the material is illustrated. Of this, 12.8 percent has photographs and 63 percent has drawings and/or photographs. About 78 percent of the material has black on white or one color other than black. These materials only require one press operation, whereas materials with two or more colors require more than one press run depending upon the number of colors used. About twenty-two percent of the material has two or more colors. Only about one percent of the material has true color.

When the characteristics of the 40 pieces receiving the highest appearance ratings are compared with the whole analyses sample, some interesting inferences can be made. (See Chapter XI for explanation of the system by which appearance ratings were developed.) There seems to be a definite preference for booklet material. (See Table X.) As was mentioned previously, this kind of material made up only 25.6 percent of the total material in the sample; however, it constituted 62.5 percent of the material with high appearance ratings, which is by ratio two and one-half times as great for the latter.

Although only 18 percent of the material has a cover, this characteristic occurred in ratio three times as great in the high-appearance materials as in the whole sample. There seems to be high preference for material with drawings; drawings as well as photographs occurred in 92.5 percent of the high-appearance materials. Photographs alone characterized 12.8 percent of the whole, but only 7.5 percent for the high-appearance sampling, a shift toward preferring drawings to photographs. Furthermore, there is a marked preference for material with two or more colors and especially so for materials with true color; the latter is 18 times as abundant in the high-appearance sampling.

Difference between Audience Group

One may ask the question, "Are there any differences in the color and illustration among audiences?" Our data show that student materials have the greatest percentage of material with photographs and drawings and two or more colors. (See Table XI.) This may explain why this audience received the highest overall appearance rating of 5.01. More will be said about relationships between appearance and quality and teachers' own use of material in Chapter XI.

TABLE X. Comparison of Format Characteristics of Whole Sample with 40 Titles Rated Highest for Appearance by Judges

Format	Sample (percent)	High appearance judgment (percent)	Ratio
Type of publication			
Books	4.5	10.0	
Booklets	25.6	62.5	1:2.5
Periodicals	2.0	2.5	
Packets	1.0	2.5	
Charts	5.3	5.0	
Folders	21.9	0.0	
Sheets	23.8	0.0	
Pamphlets	14.9	12.5	
Miscellaneous	.7	5.0	
Cover			
None	81.8	47.5	
With	18.2	52.5	1:3
Illustration			
None	24.3	0.0	
Photographs	12.8	7.5	
Photographs and drawings	62.9	92.5	1:1.5
Color			
Black or one color other than black	77.6	30.0	
Two or more colors	21.7	52.5	1:2
True color	.7	12.5	1:18

TABLE XI. Format Characteristics of the Sample by Audience

Characteristic	Audience			
	Teacher	Student	Public	Technical
Illustration				
None	44.7	11.0	19.8	42.0
Photographs	13.8	7.2	15.5	12.2
Photographs and drawings	41.5	81.7	64.8	45.9
Color				
Black or one color other than black	89.0	71.9	75.6	92.9
Two or more colors	11.0	27.4	20.9	6.7
True color	0.0	.8	3.5	.4
Grand Appearance Rating	4.94	5.01	4.91	4.86

TABLE XII. Printing Costs for Materials of Different Format Characteristics

Format Combination				
Cover	Illustration	Color	N	Average cost per copy
None	None	Black or 1 color other than black	97	.05
		2 or more colors		
		True color		
	Photographs	Black or 1 color other than black	50	.05
		2 or more colors	8	.02
		True color	3	.14
	Photos & drawings	Black or 1 color other than black	171	.05
		2 or more colors	61	.12
		True color	8	.11
With	None	Black or 1 color other than black	8	.16
		2 or more colors		
		True color		
	Photographs	Black or 1 color other than black	9	.26
		2 or more colors		
		True color		
	Photos & drawings	Black or 1 color other than black	42	.24
		2 or more colors	16	.20
		True color		

How Much Do Desired Characteristics Cost?

There is a relationship between the kind of format and printing cost. Materials with a cover cost anywhere from two to five times as much as those without a cover. (See Table XII.) Illustration does not seem to influence cost much. The cost of using black on white or one color other than black is .05 cents, regardless of the presence or absence of illustration in those materials with no cover. On the other hand, in those materials with a cover, adding photographs and/or drawings increases the cost by about half. In those pieces having no cover, the use of true color as opposed to black or one color other than black will about double the cost. We do not have data to show that this is true for materials with a cover.

Taking into consideration the kinds of formats that judges of materials liked, mentioned earlier in this chapter, it would be desirable to spend a minimum of 20 cents per copy for printing cost. This cost would provide materials with a cover, drawings and photographs, and two or more colors.

CHAPTER VII — WHAT DO FREE MATERIALS COST?

COSTS AND QUANTITIES

What is the aggregate annual expenditure for producing "free and inexpensive" materials on conservation? That question intrigued us from the outset. We can now calculate the answer. An answer to a related question was produced in the process: How many copies are produced? Both answers give rise to other questions.

Procedure for Obtaining Data

To each producer of the 1,541 titles that were in the analyses sample we sent a very brief questionnaire. (See Appendix A-3 for "cost-quantity" questionnaire.) We supplied title and publication date of a piece on the form plus our serial number to help us assign the data correctly. In addition, each form contained producer code number and our format code. We provided a key to the format code to help the producer identify the piece when we made the second mailing to those who had not responded to the first.

It turned out that producers of large numbers of titles, such as federal agencies and the New York Department of Conservation, should have been provided with their own publication code number imprinted on the piece. We caused producers of large numbers, since chance caused them to get a form for at least one-fifth of number of titles sent us, many man-hours of work.

The forms asked for data on publication history, cost, and distributions made. We asked for date of original publication —turned out several had been reprinted for 30 years but dealt with facts that do not change— number of printings, revisions, and total copies printed. We asked for either cost per copy or cost per title for last printing; if the latter was supplied we translated to cost per copy. We also asked the producer to check the distributions made.

Forms were sent to 429 different producers; 37.5 percent responded. A second mailing brought response from 44.0 percent of the remainder —the same phenomenon again, second mailing produced a higher response rate than did the first. We ended up with 1,061 returned data forms from 279 producers, a 68.9 percent return on questionnaire forms from 65.0 percent of the producers addressed.

Many of the forms returned did not have all the data requested; 67.6 percent had data on quantity published but only 47.3 percent provided cost figures. This we anticipated from visitation experiences; publication offices of agencies (or organizations) commonly are not able, whether willing or not, to produce cost figures on their own publications. Their interest is on quantity produced and/or distributed; cost is the concern of other sections of the agency.

With the data on cost and quantity placed on the basic data cards, we used Holarith sorting to arrange all cost data from least, less than one-half cent, to greatest for the 502 pieces on which we had cost data. These amounted to 32.6 percent of the analyses sample, 6.7 percent of the whole collection. From the printout of that series we developed seriations, found median by inspection and calculated the mean by seriation summation. We did the same for data on number of copies printed, a seriation in which we had 711 pieces, 9.4 percent of the total collection, 46.5 percent of the analyses sample.

How Many Copies Are Printed?

The median number of copies per title in the collection is 15,000; the mean is over 11 times that figure. The mean number of copies per titles is 172,000. The range requires five-cycle logarithmic plotting, hundreds to millions, but half of all titles have had less than 15,000 copies printed.

One percent of the 711 titles on which we have data on quantity tallies over five million copies each. Three percent have run one million or more; six percent report 500,000 upward. At the other extreme of the quantity range, less than 1,000 copies were produced for 36 titles, 5.1 percent of the quantity sample. The median tells us that half of all titles ran less than 15,000; one-fourth ran less than 5,000. The upper quarter of the quantity seriation starts at 51,000.

If we remove both extremes from the seriation, below 1,000 and above five million, the adjusted mean is 107,457. We are convinced the seriated distribution of quantity accurately reflects the publication history of the 7,500 pieces in our collection, that there is no more reason for removing the pieces of which millions of copies were printed than for removing the larger number of pieces, mostly stapled sets of duplicated sheets, of which less than 1,000 copies were run. We all know examples of the latter; we know that there are also some titles of which a few million have been printed.

The frequency for number of copies for each of 711 titles is logarithmically tabulated in Table XIII. We found it difficult to visualize a logarithmic seriation so we developed a plot of the data as Figures 4 - 5. There it becomes apparent that there are certain modal quantities: Listed in thousands they are 1, 2, 5, 10, 20, 50, 100, and 200. Figure 5 uses the cumulative plot technique to show that titles of which small quantities are printed, despite the high numbers of such titles, i. e., the median is only 15, 000, contribute little to the total of copies produced.

We are aware of one factor which might cause the mean number of copies per title for our collection, 172, 000, to be high for all 20, 000 or more titles on the active list. Only about one-fourth of our collection is technical material while around three-fourths of the active list of federal conservation agencies and at least one-half of state agencies materials is technical. Technical materials do run fewer copies than the mean for other audiences.

Do Quantities Differ Among the Audiences?

When we sorted the cards already arranged for quantity published into the four audience categories, several additional inferences were apparent. There is a marked difference in quantities printed for the four audiences. Students lead with mean = 415, 700 copies per title and a median of 30, 000, both values markedly higher than the overall figures of mean = 172, 000 and the median of 15, 000. (See Table XIV.) General public values are not significantly different; median, in fact, is same as overall. The mean for teachers' material is markedly lower, 78, 800; the median is only slightly lower, 12, 500. The technical materials are published in very much smaller quantities; mean = 38, 300, median = 6, 900.

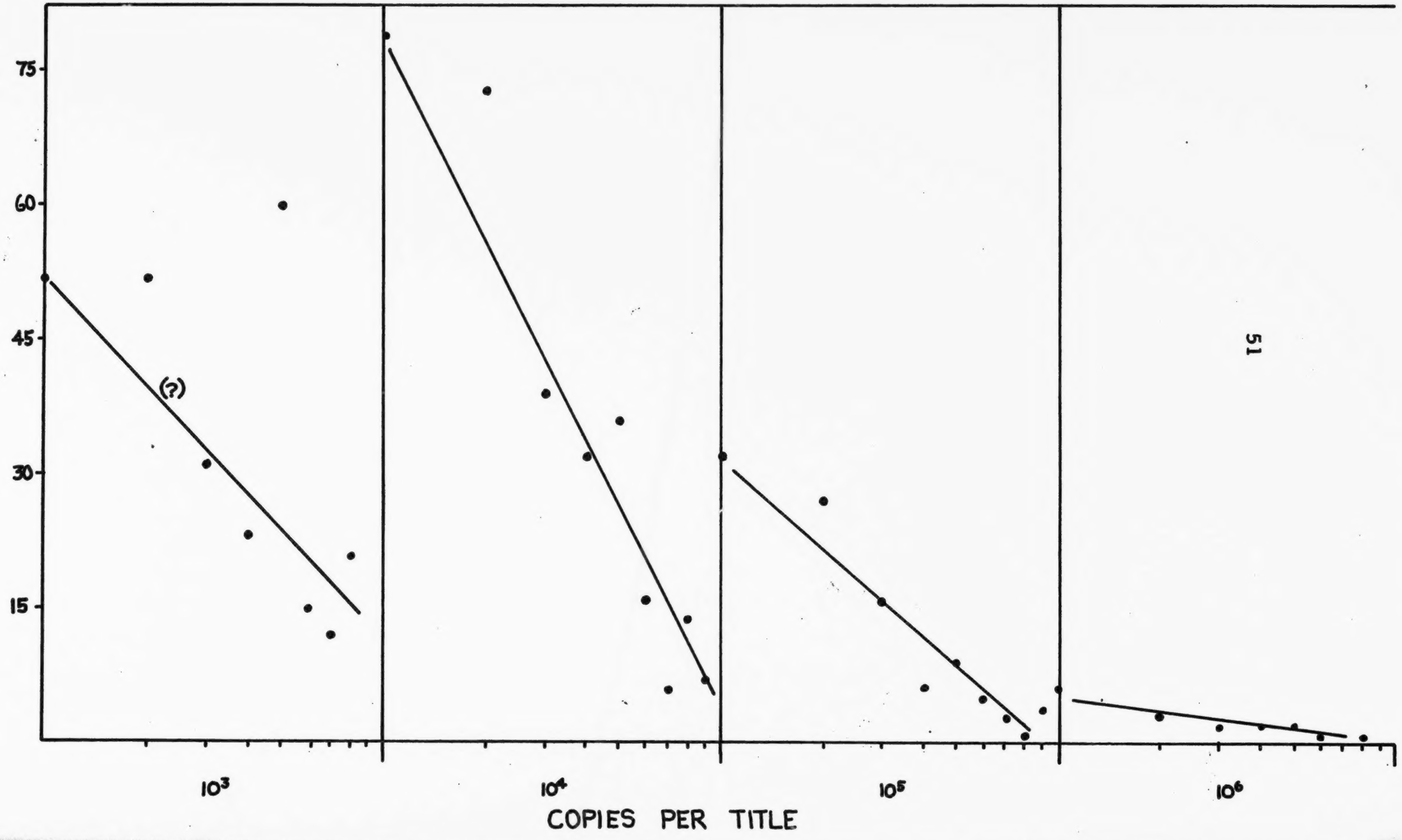
Are the Quantities Adequate?

In our teacher-awareness testing, reported in Chapter XII, we obtained proof that it takes good distribution systems to produce awareness of materials. We show also that even with good distribution it takes more copies than the size of the intended audience to adequately cover that audience; in fact, an adequate distribution, one that will cause a piece of printed material to be read and used by half or more of an audience, requires copies equal to a multiple of that audience. That is, it takes several copies per target.

TABLE XIII. Number of Copies per Title;
Logarithmic Seriation of Frequencies (f) by Subclass (c)

Seriation class, copies per title		Range in subclass (hundreds)	f	cf
Super	Sub			
Hundreds (10^2)	1-4	1-4	21	53 x 10^2
Thousands (10^3)	1	5-14	51	51 x 10^3
	2	15-24	51	102 x
	3	25-34	31	93 x
	4	35-44	23	92 x
	5	45-54	60	300 x
	6	55-64	15	90 x
	7	65-74	12	84 x
	8	75-84	20	160 x
	9	85-94	0	0 x
Ten thousands (10^4)	1	95-149	79	79 x 10^4
	2	150-249	73	146 x
	3	250-349	39	117 x
	4	350-449	32	128 x
	5	450-549	36	180 x
	6	550-649	16	96 x
	7	650-749	6	42 x
	8	750-849	14	112 x
	9	850-949	7	63 x
Hundred thousands (10^5)	1	950-1, 499	32	32 x 10^5
	2	1, 500-2, 499	27	54 x
	3	2, 500-3, 499	16	48 x
	4	3, 500-4, 499	6	24 x
	5	4, 500-5, 499	9	45 x
	6	5, 500-6, 499	5	30 x
	7	6, 500-7, 499	3	21 x
	8	7, 500-8, 499	1	8 x
	9	8, 500-9, 499	4	36 x
Millions (10^6)	1	9, 500-14, 999	6	6 x 10^6
	2	15, 000-24, 999	3	6 x
	3	25, 000-34, 999	2	6 x
	4	35, 000-44, 999	2	8 x
	5	45, 000-54, 999	2	10 x
	6	55, 000-64, 999	5	30 x
	7	65, 000-74, 999	1	7 x
	8	75, 000-84, 999	0	0 x
	9	85, 000-94, 999	1	9 x
N = 711 Mean = 172, 162		of cf = 122, 407, 300 Arithmetic total = 121, 393, 100 Error = +0.83%		

Figure 6 Logarithmic plot of copies published per title for 711 titles



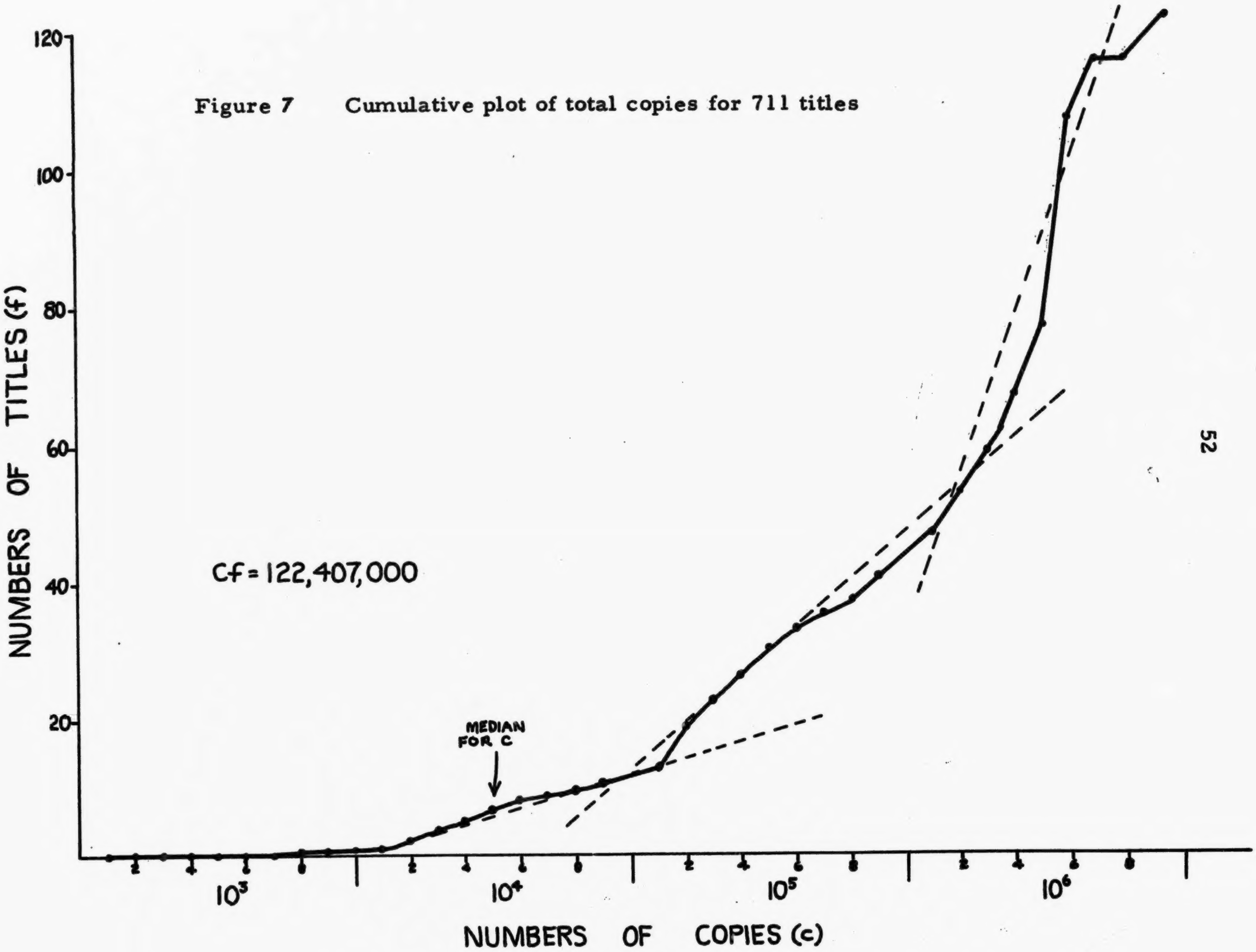


Figure 7 Cumulative plot of total copies for 711 titles

TABLE XIV. Quantities Published per Title for the Various Audiences

Audience addressed	No. titles with Q-data	Copies per title		Mean/Median
		Median	Mean	
Teachers	93	12,500	78,824	6.3
Students	157	30,000	415,653	13.9
Public	307	15,000	139,738	9.3
Managers	154	6,000	38,281	6.4
Overall	711	15,000	172,162	11.5

We were unable to develop a computer program which would have compared mean and median copies of each state's publications with the size of the teacher and student audience of the state. It is possible there are several titles which have had adequate production at state level. Our visitations, however, made it apparent that very few publications office personnel in state conservation agencies were aware of the size of the teacher and student audience of their own state.

We have stated, and Table IX gave figures, that there are several titles of which a million or more have been produced. These constituted three percent of the quantity-data sample, 22 titles. Two of these were for teachers, both slightly over 1,000,000 but there are now 2,000,000 teachers. Thirteen titles were for students; they ranged from one to nine million copies. There are now over 50,000,000 students, K - 12, in our country's schools, roughly 4,000,000 in each grade! It takes a lot of copies to saturate even one grade of that audience.

Two producers account for 10 of those 13 pieces: National Dairy Council (6) and Soil Conservation Society (4). The 22 million-and-over titles are listed below. If the same ratios hold through all extant materials, there would be around 600 titles with over one million copies; 350 of them would be for students, 50 for teachers, 160 for general public, and 25 for managers. We do believe the ratio will hold for the materials we do have in our collection; this would yield around 170 such pieces. We doubt that having 20,000 titles would increase million-copy titles in proportion because we believe we were sent most such titles in existence. We are convinced that numbers of copies produced are very seldom adequate for the school audience.

The Million-Copy Titles

The list which follows is only from that one-tenth (711 titles) of the collection on which we obtained data on quantities published. Producer for each can be identified in Appendix B.

	Producer	Copies
Teacher materials		
Soil and Water Conservation Activities	C0006	1,050,000
Set of Cow Pictures	K0143	1,276,000
Student materials		
The Fight to Save America's Waters	C0021	1,000,000
Animals	K0143	1,137,000
The Story of the Land	D0116	2,000,000
How Our Body Uses Food	K0143	2,255,000
Hello from Alaska	K0143	2,526,000
Hello U.S.A.	K0143	2,716,000
Tommy Looks at Farming	L0962	4,250,000
Our Food, Where It Comes From	K0143	4,514,000
True Story of Smokey the Bear	C0005	4,776,000
My Friend the Cow	K0143	5,832,000
Dennis the Menace and Dirt	D0116	6,000,000
Wildlife on the Land	D0116	7,000,000
Help Keep Our Land Beautiful	D0116	9,000,000
General public materials		
Department of Conservation	A0199	1,285,600
Dictionary of Textile Terms	L0661	1,400,000
ACP and You	C0003	1,525,000
Down the River	D0116	6,000,000
[illegible]me Fisheries Program	A0124	6,000,000
Hoover Dam	C0033	6,300,000
Manager materials		
The Farmer Committee System	C0003	4,146,000

How Much Do Free Materials Cost?

We received cost data on 502 titles. Range is from less than one-half cent per copy to two dollars. Earlier we had arbitrarily set \$1.00 as the end of inexpensive materials but we were figuring from the standpoint of the reader or user. We have in our collection many items costing producers \$1.00 or more a copy. The seriation of cost data is presented in Table XV. The unclassified seriation is Appendix Table D-15.

Median cost is at 4¢, one-half of all titles costing less than 4¢ per copy. Mean cost is 12.7¢. If we delete the items for which cost was

TABLE XV. Cost per Copy for 502 Titles

Cost interval	f	Progressive percent of total
1/2 - 5¢	295	58.8
6 - 10	68	72.3
11 - 15	37	79.7
16 - 20	21	83.9
21 - 25	22	88.2
26 - 30	9	90.0
31 - 35	9	91.8
36 - 40	6	93.0
41 - 45	1	93.2
46 - 50	13	95.8
51 - 55	0	
56 - 60	2	
61 - 65	2	
66 - 70	1	
71 - 75	2	
76 - 80	1	
81 - 85	1	
86 - 90	0	
91 - 95	2	98.0
96 - $1.00	4	98.8
1.01 - 2.00	5	
2.01 - 3.00	1	
Total	502	100.0

claimed to be less than one-half cent at one extreme and the items costing $1.00 or more at the other extreme, the adjusted mean is 10.4¢ per copy. This conservative figure is the one we will use for calculating aggregate annual expenditures for production of free materials.

So large is the volume of very low cost materials that three-fourths of it costs less than the mean figure. Three-fifths, 58.8 percent, costs less than six cents per copy to print. We are certain that the cost figure we have is based only on print-shop bills. The costs of planning, writing, illustrating, manuscript preparation, and editing is not included in the cost data we have. We are certain that these costs will collectively be at the very least equal to printing costs. This minimum estimate, not yet counting costs of distributing the material, gives a cost figure of 25¢ per copy.

TABLE XVI. Comparison of Costs of Materials for Different Audiences

Audience	f	cf	Median	Mean
Teachers	64	$21.72	15.5¢	33.94¢
Students	111	10.19	4.5	9.18
Public	211	16.19	3.0	7.67
Managers	116	15.67	3.0	13.59
Total	502	$63.74	4.0¢	12.69¢

Do Materials for Schools Cost More?

There is a marked difference between overall costs and costs of materials prepared for teachers. Median cost for teacher materials is 15.5¢, mean is 33.9¢. General public materials are cheapest: median, 3¢; mean, 7.7¢. Student materials are cheap too; median is not significantly different but mean cost, 9.18¢, is about one-fourth below the overall. (See Table XVI.)

That teacher materials cost more is expected but that materials to teach or influence students is cheaper than the average for all free materials is surprising. The difference can, however, be in part accounted for by the fact that larger numbers of copies have been run on student materials.

What is the Aggregate Expenditure for Free Materials?

Three figures used in a simple calculation will provide an answer to the question, What is the total expenditure for free materials? We now have them: (1) mean number of copies per title, 172,000; (2) minimum titles printed per year, 6,000; and (3) mean cost per copy, 12.7¢. The calculation for total annual expenditure is:

$$172,000 \times \$0.127 \times 6,000 = \$131,064,000$$

If we use the adjusted mean for copies per title, that calculated after removing the extremes of the seriation, and the adjusted mean for cost per copy, removing items costing $1.00 or more, we get a more conservative estimate:

107,500 X $0.104 X 6,000 = $67,080,000

A more sophisticated way of estimating aggregate annual expenditure for the printing of these materials is to extrapolate from the cost figure for each audience given in Table XVI. To apply this we need estimate the probable distribution of that minimum of 6,000 titles per year among the four audiences. As previously developed, we estimate 4, 6, 25, and 65 percent for teachers, students, general public, and managers respectively. Table XVII develops this estimate of the annual expenditure for printing materials on natural resources.

TABLE XVII. Estimated Annual Expenditures for Printing Conservation Materials

Audience	Estimated percent of total titles	Number of titles per year	Mean copies per title (10^3)	Total copies (10^6)	Mean cost per copy	Expenditure (million)
Teachers	4	240	80	19.2	34.0¢	$ 6.53
Students	6	360	415	149.4	9.2	13.74
Public	25	1,500	140	210.0	7.7	16.17
Managers	65	3,900	40	156.0	13.6	21.22
Totals	100	6,000		534.6 X 10^6		57.66

We now have a low estimate of $57,700,000, a mid-range estimate of $67,000,000, and a high estimate of $130,000,000. Bearing in mind that these are printing costs only, and that the estimate of 6,000 titles per year is our low estimate, we are convinced that well over $100,000,000 per annum is spent on the production of free and inexpensive printed materials on conservation.

Government agencies produce around three-fourths of all titles related to natural resources but, in general, government agencies produce fewer copies and lower-cost materials so it cannot be inferred that governmental agencies account for three-fourths of the aggregate expenditure for printing these materials. Both government and the private producers can argue that some part of the expenditure is defrayed by charges for some materials; nevertheless, the production is paid for and the aggregate payment represents a tremendous input.

CHAPTER VIII — WHEN WERE THE MATERIALS PUBLISHED?

The mailed requests asked for materials published in the years 1959 - 1964. These dates were seldom regarded as limiting; we were sent whatever was available. The distribution of dated pieces by year of publication indicates that neither the dates 1959 or 1958 mark a cut-off point for sending materials. We have some pieces published in the 1920's and some for the current year.

The sending of everything available without regard to date proved to be a windfall for the project. In the first place, it indicated that the distributors of free printed materials are not much concerned about the date of the material. Secondly, it gave us data on dating practices, on the active life of free materials, on changes in scope or emphases over time, and on the effects of dating practices and recency on quality assessments.

The Practice of Not Dating Material

Three-tenths of all material in our collection is undated, 29.9 percent. There are notable differences between groups of producers with respect to the practice of not dating free materials; nearly all federal-agency material carries a publication date. With rare exception all material printed by the Government Printing Office at least carries printing date in code. Practices in state agencies do not show clear patterns; some states date, some don't, and some agencies in nearly every state print undated materials. Extension Services nearly always date materials; this could be a result of federal-agency practice.

Where Do Undated Materials Come From?

State agencies yielded 50 percent of all titles in our collection but 58 percent of the undated titles. Collectively they more often do not date materials than is the case for all producers represented in the collection. In Table XVIII is shown first the percent of total titles from each producer group, then the percent of total undated titles contributed from each group. Wherever the two figures are nearly alike

TABLE XVIII. Comparison of Percentages of Undated Titles with Total Titles by Producer Group

Producer group	Code	Percent of total titles	Percent of undated titles	Undated / Total
State agencies	A	50.0	58.0	1.16
State organizations	B	4.1	8.7	2.12
Federal agencies	C	25.8	9.6	0.37
National organizations	D	6.1	5.5	0.90
State D. P. I.	G	2.6	2.8	1.08
State educa. orgnztns.	I	0.1	0.0	
Natl. educa. orgnztns.	J	0.4	2.1	5.25
Industrial associations	K	4.8	5.1	1.06
Industries	L	6.1	10.1	1.66

the group has not deviated from the average in the practice of not dating materials. The last column of the table helps make the deviation, if any, apparent by giving the quotient produced by dividing percent of undated titles by percent of dated titles. Deviations now show up as deviation from the value 1.00.

National educational organizations, state organizations, and industries, in that order, more often do not date materials. Federal agencies deviate markedly from the average practice as measured by the collection; for them the quotient is 0.37. Collectively, materials produced by governmental agencies are much less often undated than is the case for other producers.

What Do Undated Materials Discuss?

Materials dealing with recreation and with animal resources are more often undated, 39.4 and 37.3 percent respectively, than are materials on minerals and water 13.7 and 19.6 percent respectively. (See Table XIX.) Only 10.7 percent of the technical material is undated but 38.1 percent of materials for students and 36.8 percent of materials for public are not dated. (Tallies are Appendix Tables D-8 through D-12.)

When one examines the material by sorting category one notes that nearly six-tenths of the student materials on soil is undated. Much of this happens to be land-judging material. Unexpectedly, teacher materials on animals has the second largest departure from its audience mean and second largest percentage of undated material. Much of this is highly ephemeral single-sheet material emphasizing

TABLE XIX. Percent of Undated Materials in Each Sorting Category

Audience	Subject								Audience total
	1	2	3	4	5	6	7	8	
Teachers	31.3	30.0	37.5	28.6	25.8	53.2	41.7	17.1	28.6
Students	38.6	56.9	26.9	38.3	28.6	41.2	30.3	49.1	38.1
Public	32.6	33.1	25.3	27.8	34.5	39.3	42.3	38.6	36.8
Managers	14.9	7.0	9.9	4.5	11.8	15.3	18.0	12.4	10.7
Subject total	29.5	28.0	19.6	13.7	26.6	37.3	39.4	30.5	29.9

○Cells circled exceed mean by 33 percent or more.
□Cells outlined are 33 percent or more below mean.

animal identification. Technical material varies little in dating practice among subject categories; recreation departed most from the low mean for the audience. The most-often-dated category is technical materials on minerals with only 4.5 percent not dated. Most of the material in that sorting category is published by the U.S. Bureau of Mines.

We learned from our visitations to producers that some agencies avoid dating materials because they believe the material will be usable longer if not dated, that placing a date on free and inexpensive materials hastens their obsolescence. On the other hand, we learned from other producers and from many potential users that dating assures a longer period of usefulness —and greater safety of use— because one does not have to wonder about the time factor.

How Long Do Materials Last?

Free and inexpensive materials are ephemeral; they do not stay long on the active list. Table XX shows the total number of dated titles in our collection for each year from before 1950 through 1965. The dating for the last year reflects the fact that we were not collecting in 1965, in fact the 1964 collection is far from complete because our first 1,472 requests were mailed in March of that year.

The last four columns of Table XX present four series of reduction rates in an attempt to show the "life expectancy" of free printed

TABLE XX. Publication Dates and Progressive Reductions of Dated Materials in the Collection

Year	Titles	Percent of dated total	Progressive shrinkage[1]	Annual rate of reduction[2]	2-year reduction rate[3]
1965	293	5.5			
64	1102	20.8			
63	962	18.2	- 2.6	12.5	
62	793	15.0	- 3.2	17.6	28.0
61	546	10.3	- 4.7	32.1	43.2
60	401	7.6	- 2.7	26.2	48.2
59	293	5.5	- 2.1	27.6	46.3
58	214	4.0	- 1.5	27.3	46.6
57	160	3.0	- 1.0	25.0	45.4
56	130	2.5	- .5	16.7	39.3
55	123	2.3	- .2	8.0	23.1
54	86	1.6	- .7	30.4	33.8
53	64	1.2	- .4	25.0	47.9
52	50	.9	- .3	25.0	41.9
51	46	.9	- .0	8.1	28.1
50	22	.4	- .5	55.0	56.0
50	12	.2	- .2	40.0	73.9
				Means = 25.1	43.0

[1] The difference between successive figures in third column

[2] The reduction from preceding year on base of that year, column 2.

[3] The 2-year reduction on base of two years before, column 2.

materials. The first simply shows what percent of total copies in dated portion of collection each year-class comprises. It will be noted that there is a progressive reduction. The next column simply shows the difference between the percentage figure for each successive year from most recent to oldest. To the statistically trained, no more calculations are needed; the last two columns are for most people.

The mean annual rate of reduction in materials per year-class is 25.1 percent; i. e., about one-fourth of all titles published are exhausted within one year after publication. These are calculations presented in column five of Table XX. The mean reduction rate for each successive two-year period is 43.0 percent. Calculations from the same table yield 56.2 percent as the mean reduction rate for three-year periods; i. e. that 100 - 56.2 or 43.8 percent of the publications of a given year are still available three years after publication. Four years after publication the shrinkage is 66.8 percent; 33.2 percent are still available.

The plot of these data in Figure 8 shows a very regular regression in titles per year. We are convinced that most materials are exhausted before they are outdated. If one starts with the plotted datum for 1963 and assumes, as we have in the above regression calculations, that the number of pieces produced (or reprinted) each year has not varied greatly from year to year, one notes that the number of titles shrinks almost one-half for every two years of publication age.

The calculated regression series developed from Table XX is 25, 43, 56, 67, 74, 80. That is, of the materials printed in a given year, 57 percent is left two years later, 33 percent is left four years later, and only 20 percent remains after six years. One may say that the "half life" of free and inexpensive printed materials related to conservation is not much more than two years!

Does Undated Material Last Longer?

Three-tenths (29.9 percent) of the materials in our collection, not including publications lists, is undated. In our cost-quantity questionnaire we asked for year of publication and did get that datum for 169 undated titles. We find that the mean age (years since 1965) for the dated titles is 4.0 years while the mean age for undated titles is 5.0 years. Undated materials are slightly older than are the dated ones. (See Table XXI and Appendix Table D-13.)

When we plot the distribution of dated and undated titles, each year's class as a percent of total for the group, we note that the age distribution is not greatly different. This is the second line plotted in Figure 8. However, while the initial depletion rate for undated titles is slightly greater than that for dated materials, the undated begin to gain after some ten years' lapse of time.

The more rapid initial depletion of undated titles is no doubt caused by "throw-away" materials, materials not expected or intended to stay on the active list. Much of the recreation material is so characterized. The persistent items are mostly materials not much affected by lapse of time, e.g., plant and animal descriptions, how to build a bird house, etc. Some of these pieces stay on the list for a long time. Some of the pieces published before 1950 that account for the upswing of the line for undated materials in Figure 8 are 30 years old. However, it must also be noted that some materials carrying a relatively recent printing date are unrevised reprints of material equally old.

It seems that for most materials the active life of undated titles is not markedly different from that for dated ones. Free mate-

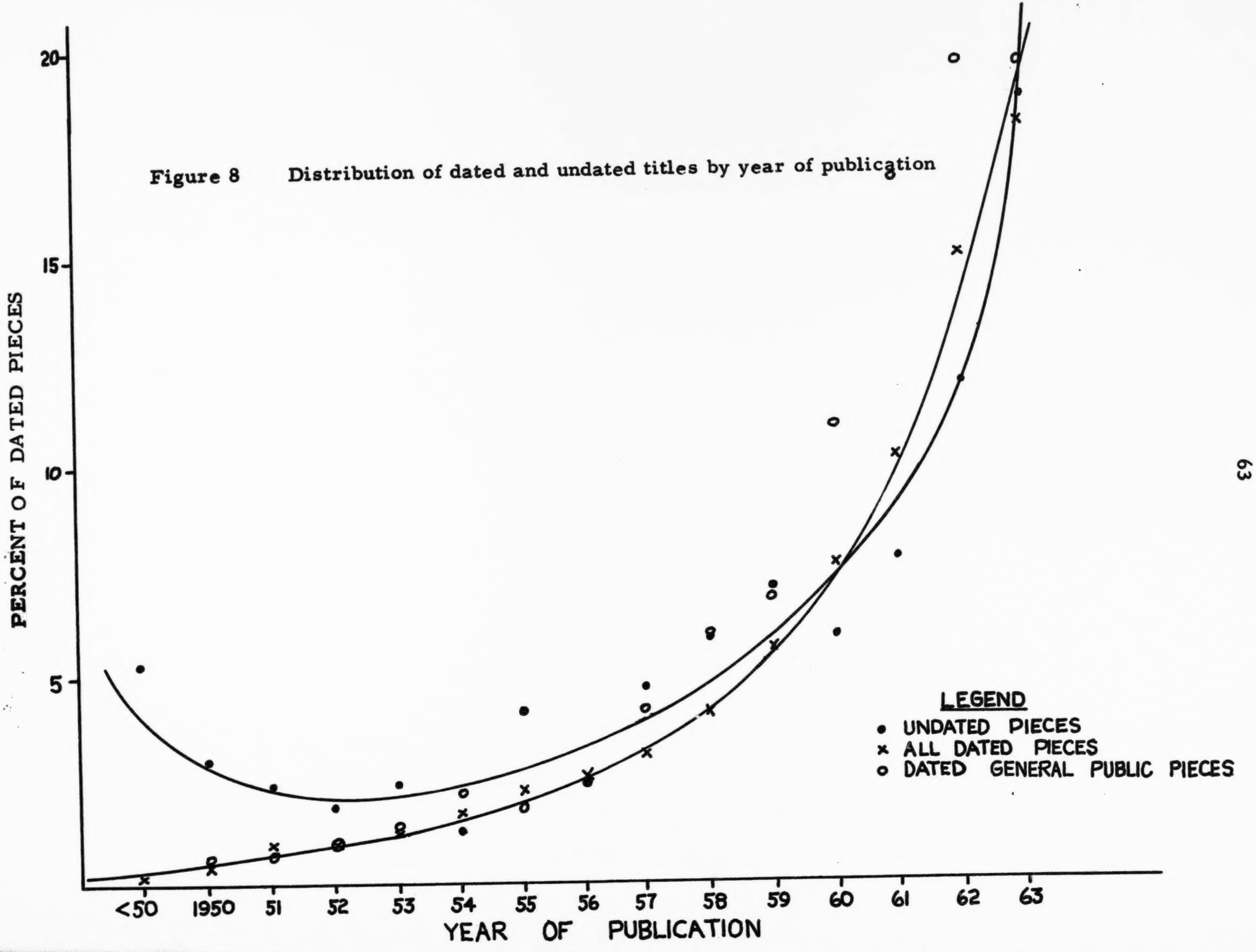


Figure 8 Distribution of dated and undated titles by year of publication

TABLE XXI. Comparing Date Distribution of Dated and Undated Titles

Year of publication	Percent of total for group	
	Dated materials	Undated materials
1965	5.5%	3.6%
64	20.8	11.8
63	18.2	18.9
62	15.0	11.8
61	10.3	7.7
60	7.6	5.9
59	5.5	7.1
58	4.0	5.9
57	3.0	4.7
56	2.5	2.4
55	2.3	4.1
54	1.6	1.2
53	1.2	2.4
52	.9	1.8
51	.9	2.4
50	.4	3.0
50	.2	5.3
Total titles	5,297	169*

*169 out of total of 2,252, a 7.5 percent sample

rials are ephemeral; most are exhausted before they are outdated. In a culture that is very conscious of dating, that so commonly asks, "What is the date of that information?" dating would seem preferable. Educators prefer dated materials. It seems that little is gained and much is lost by the belief that not dating material will make it last longer.

CHAPTER IX — HOW READABLE IS THE MATERIAL?

Common is the charge that free and inexpensive materials are "pitched above the heads" of the intended audience. We planned from the outset to measure readability levels of the materials on conservation. This was one of the major phases of the project.

Selecting a System for Measuring Readability

We knew we needed a system for measuring readability that would discriminate over a wide range. We had assumed that the widely-known Dale-Chall (1948) formula for predicting readability would be the most readily applicable except for pieces for the primary grades; the Dale-Chall formula does not discriminate below grade-level four. For primary-grade material, i.e., all materials falling below grade four as measured by the Dale-Chall formula, we intended to employ the Spache formula using the Stone (1956) word list. We also proposed to try out the Rinsland formula as modified by Tribe (1957) because it claimed to cover all grades through high school.

Two graduate students were employed to try out formulas and develop a mass-production system for measuring readability of several thousand pieces. Sandra Sapatka, a graduate student in science education, was leader and David Pemberton, law student, was the assistant. Several undergraduates were subsequently employed to work on this large operation. The first assignment given Sapatka and Pemberton was to seek and try out measurement systems. We selected 30 pieces covering a wide range of readability as test pieces.

They quickly found and tried several systems, among them the Thorndike, Stone, Spache, Rinsland, Tribe, Dale-Chall, and the famed Fog index. Most, they said, were much too complex for our purposes; we could not spend one-half to one hour per title. We soon found out that we had no need to discriminate below grade-level four, that very few pieces in our collection had readability suitable for primary grades. We also discovered that the Dale-Chall system yielded a wider range of assay and furthermore —and this was very important to us— that it was one of the easiest to apply. The Fog index, both famed and damned among journalists, took less time to apply but it would not discriminate as well as the Dale-Chall system, at least not on the 30 test pieces. Furthermore, since the Fog index counts all words of more than two syllables, the words "conservation," "education," "natural," and "resources," common in our materials, might tend to raise scores so much as to require a modification of that index's multiplication factor.

The Dale-Chall formula does not claim to predict the grade in school at which a piece of material is readable. It does provide a measure of relative readability. Its results correlate well with the grade for which standard textbooks used in school are labelled. One may argue that that is because texts are now being written to fit the formulas but in any case our application of the Dale-Chall formula provides a measure of relative readability.

How We Measured Readability

We arbitrarily decided to select three sample passages from each piece. One was to be from among the first few pages, one near the middle, and one from among the last pages; most of our materials had only a few pages, less that 10. Each passage was to start with the first new paragraph on the randomly-selected page. The paragraph was to be the sample unit but if the paragraph contained fewer than 60 words the following paragraph was to be added to the sample.

One worker would select samples, mark them with a "Highlighter" while counting total words, count sentences , and record data on the master data card attached to the piece. A second worker would circle and count words not in the basic vocabulary of 3,000 words. A third worker would make the calculations to produce the raw score, find the raw score from the Dale-Chall score tables, convert the raw score to grade level, and record these data on the card.

We mention these details because we measured readability of over 3,000 pieces of material. The crew of six student workers organized mass-production procedures but alternated responsibilities. They consistently averaged 10 - 12 minutes per piece whereas Dr. Edgar Dale predicted a rate of two pieces per man-hour!

We measured readability of all pieces of student material, most pieces of public material, and the analyses sample only for teachers and managers. In addition we measured readability of many national magazines, several student periodicals, and a sampling of textbooks to develop a base for comparison of readability scores.

Readability of Some Well-Known Materials

We made 112 determinations on 12 popular and school magazines and 109 on 35 graded textbooks. The texts were selected in these areas: literature, social studies, and science. The objective was to provide a base for comparison, an aid to the interpretation of the data on readability.

Life and Newsweek averaged grade-level 10; Reader's Digest and Post, 9th, as did also two leading magazines for elementary teachers, the Grade Teacher and the Instructor. The NEA Journal averaged 12th. Student periodicals ran very close to claimed grade level: Highlights, 5th; News Explorer, 6th; Junior Scholastic and Seventeen, 8th. (Appendix Tables D-20 and D-21.)

Measurements of 35 standard textbooks in the subject areas of English, science, and social studies for grade 4 - 12 yielded only two cases where measured level exceeded intended level by two grade-levels; both were for elementary science. (Appendix Table D-21.) Six others were one grade-level over intended grade of use. Dr. Dale insists that at grade-levels four and up material falling within one grade level as measured by the formula is close enough.

These measurements may help interpret the readability data. They also make it apparent that commercial publishers, including magazine publishers, do carefully watch readability level of their material.

Testing Reliability of the Sample

Readability measurements afforded still another test for reliability of the analyses sample. We had measured readability of every piece of student material to which the measurement was applicable, e.g., charts and maps could not readily be measured. There were 822 titles of student materials; readability was measured for 680 of them, 82.7 percent. The sample of student materials contained 289 titles; readability was determined for 252, 87.2 percent. The mean readability was 9.16 for both sets. The sample, we concluded, is adequate for all readability measurements (see Table XXII).

Having determined that the sample was adequate for readability measurements of audience groups, it was no longer necessary to tally all readability measurements we had made to give a reliable picture of the relative difficulty of materials. We therefore report on basis of tallies made by hand when each audience was nearly complete. Tabulation totals of the readability tables, Appendix Tables D-16, D-17,

TABLE XXII. Readability Measurements of Sample and Whole for Student Materials

Raw score	Grade level	Whole student class		Student sample only	
		f	percent	f	percent
4.99	4	31	4.6	11	4.4
5.00-5.49	5	32	4.7	11	4.4
5.50-5.99	6	58	8.5	27	10.7
6.00-6.49	7	69	10.2	26	10.3
6.50-6.99	8	97	14.3	31	12.3
7.00-7.49	9	101	14.8	42	16.7
7.50-7.99	10	84	12.4	32	12.7
8.00-8.49	11	80	11.8	29	11.5
8.50-8.99	12	46	6.8	18	7.1
9.00-9.29	13	17	2.5	4	1.6
9.30-9.59	14	15	2.2	5	2.0
9.60-9.99	15	22	3.2	9	3.6
10.00	16	28	4.1	7	2.8
	Total	680		252	

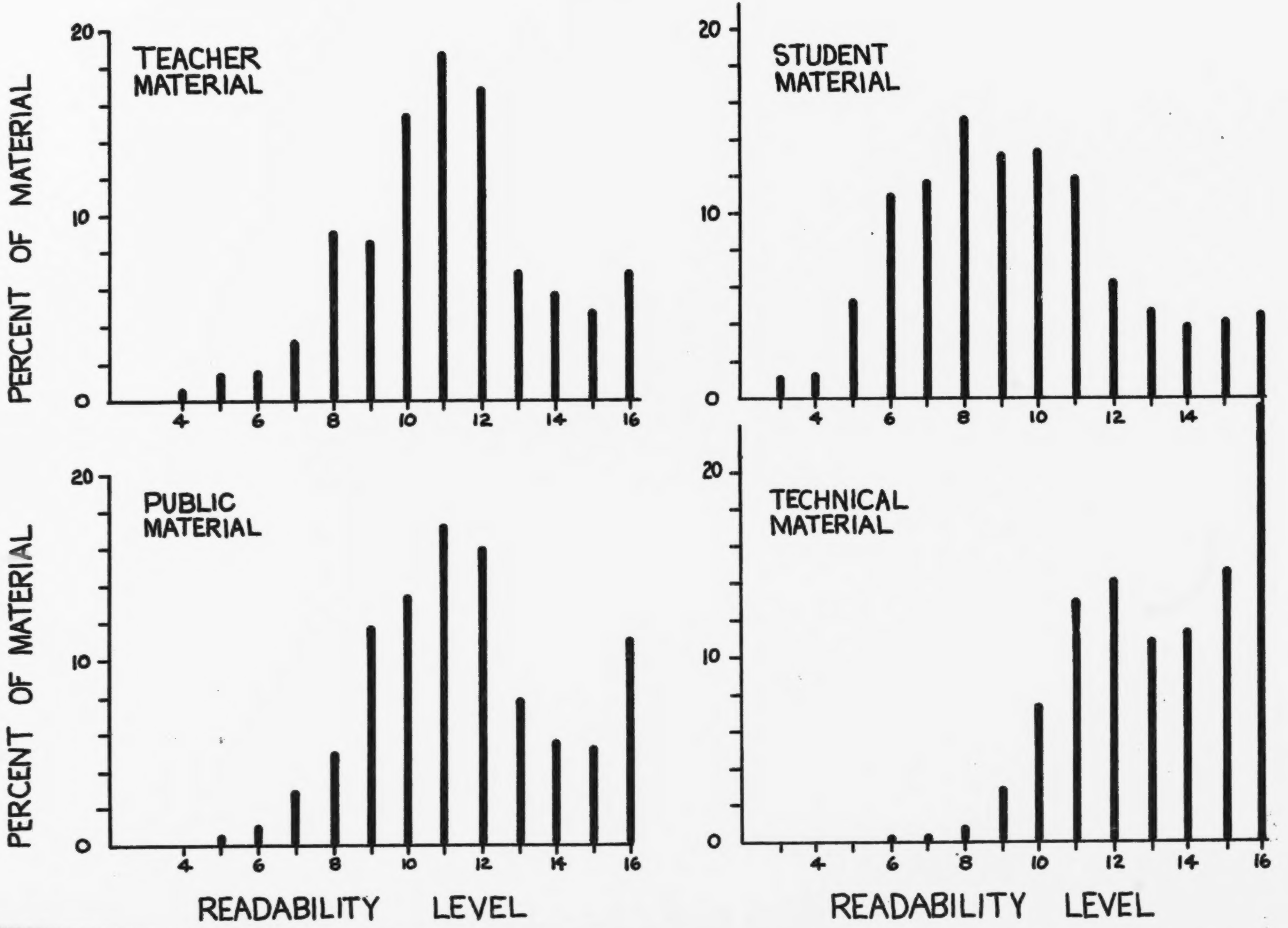
D-18, and D-19, will not exactly agree with final totals.

Readability Levels of the Materials for Teachers

Readability determinations for 186 pieces of material addressed to teachers are in Appendix Table D-16. The analyses sample contains another 38 pieces for which readability determinations were not applicable, e.g., maps, charts, posters, etc. Figure 9, which follows, shows the percent of teacher materials for each readability level; it is comparable to those for student and public materials which follow.

Readability levels for teacher materials ranged from grade four to grade sixteen and above. However, there was only one item for grade four. Ninety-three percent of the materials ranged from grade-level eight to sixteen and above. Nearly seven-tenths, 68.9 percent, was measured as grade levels eight through twelve. Tenth, eleventh, and twelfth were close with 15.6, 18.8, and 16.7 percent of the materials, respectively; together these constitute one-half of the total. The modal readability level and the mean readability level are both eleventh grade. Mean Dale-Chall raw score was 8.27; the system translates raw scores of 8.00 - 8.49 as eleventh grade readability. Materials prepared for teachers, it seems, do not miss their reading level as badly as do the materials prepared for students and for the general public.

Figure 9 Readability levels of the materials for the four audiences



Readability of Student Materials

Readability of student materials range from "4 and below" to "16th and above," the full range of the Dale-Chall scale. All raw scores above 10.0 are called "grade 16 and up"; we got raw scores above 20.0, admittedly mainly in technical materials! Three-fourths of the student material, 76 percent, ranged from 6th through 11th readability levels. (See Appendix Table D-17.) The modal frequency is 8th grade and the median is 9th; the mean is 10.7. (See Figure 9 and Table XXIII.)

There are very few materials having readability suitable for primary grades and relatively little for intermediate grades. Only 31 pieces among the student materials have readability levels below grade five. Six are produced by the U.S. Bureau of Indian Affairs for teaching adult Indians to read. Five are productions of industrial associations; others are printed by industry and show the hand of elementary-education specialists. The Missouri Conservation Commission is the only state agency appearing more than once among the 31 pieces; they acknowledge consultation with reading specialists.

Only 18 percent of the total of material addressed to students has readability levels below seven; as stated above there are few materials suited, readability-wise, for elementary grades. The aggregation of student materials above twelve is equal to that below seven; these levels are above the students for whom they might be useful, content-wise.

It may be significant that of the 50 pieces of student material having the highest readability levels, 15th and up, 42 percent were produced by federal agencies and 38 percent by state agencies. The former were responsible for 20.2 percent of all student materials in the collection, the latter for 53.3 percent. It does seem that federal agencies as a group overshoot on readability on student materials more than do the other groups.

Readability of Public Materials

For the general public the readability level is markedly higher, even higher than for teachers. The mode is 11th grade (see Figure 9) but 12th is a close second; 58 percent fell into grades 9 - 12. The mean is 11th grade (11.84) but the end level, "16 and above," had a high frequency. If the formula discriminated above 16, the mean would move upward. Less than five percent fell below 7th.

Newsweek was the only one among the national magazines sampled having 11th readability. The others ran from 7th - 9th; Reader's Digest articles ranged from 6th - 9th. It is clear that most conservation materials for the public are overshooting on readability.

The Technical Material is Technical

We had readability measurements for 288 titles of technical materials. Mean readability was 13th grade (13.29). The modal readability is 16th and up, the last frequency class. If raw scores were used, instead of grade-level classes, for computing the mean, it would climb beyond the "Ph. D. level"! Materials for managers and technicians rarely have readabilities suitable for school use; only 4.1 percent have readabilities below 10th grade, 60.8 percent have readabilities beyond grade-level 12.

TABLE XXIII. Comparison Statistics on Readability of Materials for the Four Audiences

Audience	Readability Statistics			
	Range	Median	Mode	Mean
Teachers	5 - 16	11	11	11.07
Students	4 - 16	9	8	10.72
Public	5 - 16	11	11	11.84
Managers	6 - 16	14	16	13.29

Are Conservation-related Words the Problem?

We had hypothesized that conservation-materials have a rural or agricultural orientation, that they would present problems for urban-oriented children because of vocabulary. Our lead worker on readability, Sandra Sapatka, tallied "unfamiliar" words in the readability sample on student materials on soil, on water, and general conservation. Unfamiliar words were all words circled to indicate they were not on the Dale-Chall list of basic 3,000.

The following words appeared most frequently:

area
conservation
determine
erosion

national
natural
nature
provide

usually
normally
publication

These unfamiliars were next in frequency:

absorb
available
community
content
control
develop
ecology
manage
material
mineral
moisture
particle
plaster
practice
prevent
programed
project
represent
resource
result
shelter
slope
subsoil
supervise
survey
sustain
systems
type
usually
watershed
wildlife

It did not seem that this collection of words could be said to pose any greater difficulty for children in urban than in rural environments. We abandoned the hypothesis. It is not any particular set of words that cause readability problems with respect to conservation materials.

We do believe, however, that there is a readability problem and that it is more serious than we had hypothesized. The U.S. Forest Service study, discussed in Chapter I, contained the recommendation from teachers that materials be more "technical." That very word illustrates one of the readability problems: What was it meant to mean in the context in which it was used? —the word "conservation" poses even more problems of meanings. We believe that the teachers contacted in the USFS study and the teacher judges who worked for this study are dissatisfied with much of the free conservation material because it contains so little information. We assume that it was more information, more "depth," that teachers wanted when they said they wanted the material to be more "technical." We have made it clear that there is a great deal of "technical" material but we are certain, and this our readability data supports, that little of the technical material is readily readable to most students in our schools.

We believe the readability problem is even more critical for the adult audience to which so much of this conservation material is directed. We are convinced that few of the producers of conservation-related free materials have worried enough about readability of the material. We know of very few that have used the services of readability specialists. Most of the producers who have hired or consulted such specialists are industrial associations.

CHAPTER X — WHAT DO THE MATERIALS TELL?
SCOPE AND CONTENT

By Rhea Kathleen Copening*

We had hypothesized that there are imbalances in the scope of conservation materials, that some resources receive much less attention than do others. The crude-sort system was designed in part to prove or disprove this hypothesis. We soon discovered, however, that materials on plants, for instance, dealt mainly with trees and forestry, and very little with agricultural plants. It therefore became important to us to know more specifically what the materials do discuss. To meet this need, a phase of the project not foreseen was developed, the analysis of content.

Scope of the Materials as Determined by the Crude Sort

During the course of the project, materials were sorted according to the two-axis sorting scheme described in Chapter II, "The Collection of Materials." From this crude sort we were able to provide data on imbalances among the resources (subjects) treated. The distribution of 7, 524 titles, excluding publication lists, by resources discussed and audiences addressed was shown in Table III.

The category "general" includes all material that gives nearly equal attention to two or more natural resources. There are eight sorting categories in which we have tallied less than 50 titles: teacher materials on soil, minerals, water, animals, and recreation; and student materials on water, minerals, and recreation. The basic natural resources —soil, water, and minerals— have fewer publications than do plant and animal resources. (See Table XXIV.)

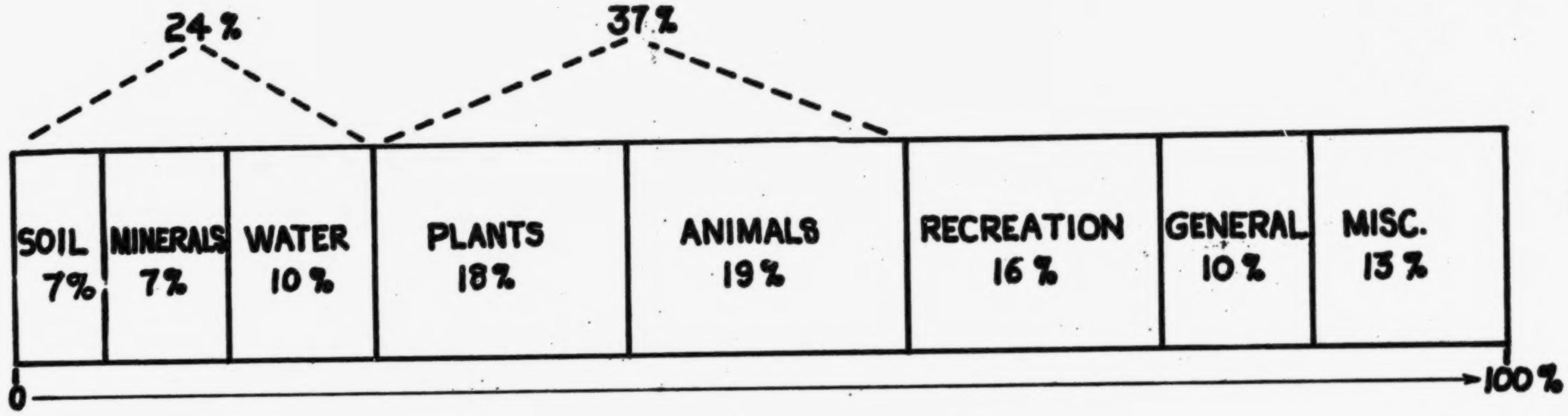
To make visible the degree to which the basic natural resources are slighted in the materials, we drew a bar for the total and divided it into portions corresponding to the percent of titles dealing with each

---

*Rhea Copening is an undergraduate student at Ohio State University majoring in a conservation-education program leading to two Bachelors degrees.

Figure 10

DISTRIBUTION OF 7,524 MATERIALS BY SUBJECT



resource category; this is Figure 10. Soil and minerals received the least, soil being slightly less with 6.7 percent; minerals accounted for 7.4 percent, followed by water with 9.6 percent. The three basic natural resources share 24 percent of the total titles; plant and animal resources together have 54 percent more, 37 percent of the total titles. These data reveal a significant imbalance in the scope of free and inexpensive materials related to conservation.

TABLE XXIV. Percentage Distribution of 7,524 Titles by Subject as Measured by the Crude Sort

Resource discussed	Percent of total titles
Soil	6.7
Minerals	7.4
Water	9.6
Plants	18.1
Animals	18.8
Recreation	16.1
General	10.4
Miscellaneous	12.9

Content-analysis Procedure

In order to provide a more detailed and accurate description of the subject matter of the materials, a system for content analysis was devised. The original plan was to develop a score card which could be applied by different people without variation. It was also hoped that the system would be suitable for computerization or Holarith sorting. After a year of labor and three unsuccessful systems, it was decided that the most practical method of analyzing the material would be to read it and keep a tally count on its content by topics given or suggested by the material itself.

Earlier, through reading-level determination and specialist judging, and later during content analysis, we discovered that the crude-sort placement of materials was not completely accurate. "You can't judge a book by its cover," that is, materials do not necessarily discuss what their covers say they will. The most common example was that materials entitled "Soil and Water" were often about soil only. The second source of sorting error was "human error"; since several different people worked on the crude sorting, there were inconsistancies in the placement of materials. One worker might place "youth camps" in the "general" category, while another would put it in "miscellaneous." The general and miscellaneous categories were the most frequent locations of errors; however, "recreation" and "animals" had inconsistancies also, pertaining to the placement of materials on hunting and fishing. Errors occurred in assigning audience, especially between teachers and students. In several instances, however, materials could justifiably be assigned to either of two audiences.

Although the sorting error appeared to be large, a final look at the subject-audience distribution (see Table XXV) showed that the errors were not accumulative, but tended to cancel each other. In most cases the distribution differences, crude sort compared to category sort by content, amounted to only one or two percentage points. The largest difference, five percentage points, is found in the teacher-miscellaneous category. During the analysis many pieces found in this category were tallied in various categories throughout the teacher audience.

Where the crude sort had given us information on the broad scope of subjects treated by our materials, content analysis was expected to give us more detailed information on what the materials stressed when they discussed a particular resource. For instance, the analysis told us how much of the material on plants discussed forest fire prevention and how much discussed agricultural crop management.

The content analysis tally system was devised from an experiment with sorting categories 11 - 18 (materials for students). The procedure which we developed was to list the topics which were discussed in each of the sorting categories. We counted the number of times each topic was dealt with and calculated its percentage of occurance in that category. For example, in category 15 (student material on plants), 26 out of the 190 pieces dealt mainly with fire prevention; this topic then could be said to appear in 14 percent of the student materials on plant resources.

We found that not every piece dealt with only one topic. Therefore, we also counted two-topic, three-topic, and "general" (four or more topics) material separately. In the final calculation we combined these multi-topic pieces with the single-topic ones, which explains why when totaled, the percentage total for any one category sometimes is more than 100 percent.

A comparison of the content of the analysis sample to the con-

TABLE XXV. Distribution of Materials for Each Audience by Subject as Determined by Content Analysis

Subject	Student	Audience Teacher	Public
General	13 percent	40 percent	6 percent
Animals	27	7	25
Plants	25	11	15
Recreation	4	5	26
Water	3	4	9
Minerals	6	4	3
Soil	6	2	6
Health and Safety	2	3	2
Careers	7	0	0
Other	7	22	6

tent of an entire category showed that a one-third sample of a category of less than 100 titles did not adequately reflect the content of the entire category. Therefore, it was decided that all pieces in sorting categories of less than 100 titles would be analyzed, but that in those categories greater than 100 only the sample need be read. The exceptions to this ground rule were student materials on plants, animals, and miscellaneous.

It was hoped that the topics list developed from the student material would be applicable to the teacher, general public, and technical materials. Materials for the general public categories were very similar to those for students. The teacher category had some unique variations and these are noted where significant. We did not have time to analyze the technical materials. A series of tables showing our findings with comments thereon follows.

It will be noted that the total figures and the pieces-analyzed figures do not always correspond with each other, nor do they always correspond to the crude-sort figures. As was mentioned before, some materials were incorrectly sorted. "Content analysis" was the last attempt to provide accurate data on the subjects and topics most often discussed by free and inexpensive conservation materials.

Content of Materials on Soil

If there is any one topic that the material on soil treats more than others, it is "soil erosion". Erosion is discussed in slightly more than one-half of the student material (See Table XXVI). The only topic which exceeds erosion is "land and/or soil use" in public materials--several of the land-use materials were found in the category "general." This topic deals mainly with possible land uses and the importance of using the land wisely. The next largest category in student material (also one of the largest in teacher materials, and third largest among materials for the public) was soil mapping and land judging, etc. Most of these pieces were directed to youth groups such as 4-H, Future Farmers, and vocational agriculture students.

It appears that teachers have lots of help when it comes to teaching soil conservation. Seventy percent of the material directed to them contained teaching suggestions (curriculum suggestions, teaching aids, and activities to accompany lessons) and 50 percent contained bibliographies and reference lists —mostly on soil structure and erosion.

There was one topic in the public materials which was significant but did not belong. These were nine pieces which dealt with farm equipment. Since farmers are resource managers, these pieces are technical material.

Materials on Water

In teacher and general public, the most talked about topics in the water categories were "pollution and waste treatment" and "water use and importance" (See Table XXVII). There was also a significant amount of materials on some of the other water management problems.

The student material, on the other hand, concerned itself less with management and more with the physical description of how and in what form water gets here and what happens to it when it does, (meteorology and hydrology). Surprisingly, when the student material did get around to talking about management or conservation problems and practices, they discussed irrigation. The topic irrigation usually described or implied the importance of water and its relation to agricultural crops. Relatively few student pieces dealt with the elsewhere much-discussed water pollution.

Only the general public material discussed the less obvious use of water, hydroelectric power. Most of these materials were on the established or proposed government dam projects —TVA being the most common. Most of these materials also discussed the other aspects of the reservoirs, such as flood control, recreation, and irrigation.

Suggestions to teachers again were high with 67 percent and 38 percent of the material contained bibliographies or reference lists.

TABLE XXVI. Percent of Titles on Soil Treating Various Topics

Subject	Audience Student	 Teacher	 General Public
Soil mapping, testing and land capability judging	30	40	26
Erosion and control	52	40	29
Other soil management problems and practices	20	20	16
Soil formation and function	24	40	24
Uses of land, soil	16	30	39
Glossary	2	20	
Bibliography/reference lists		50	
Teaching suggestions		70	
Agencies and responsibility	2		8
Total pieces	58	10	293
Pieces Analyzed	50	10	38

TABLE XXVII. Percent of Titles on Water Treating Various Topics

Subject	Audience Student	 Teacher	 General Public
Meteorology	31	13	5
Hydrology	42	3	5
Water use, importance	19	38	22
Pollution and waste treatment	12	42	30
Floods and control	4	21	5
Multiple use reservoirs/hydroelectric power	4	4	23
Other water management problems (irrigation and farm pond management)	27	21	23
Glossary	4		
Bibliography, lists		38	
Suggestions to teachers		67	
Total pieces	26	24	384
Pieces analyzed	26	24	60

Materials about Minerals

It must first be noted that minerals titles constitute a very small percentage of the total materials. Therefore, any series of publications from one producer, on a single subject, would tend to distort the topic-distribution chart. This is exactly what happened. (See Table XXVIII).

Forty-five percent of the student materials dealt with "geologic processes", however, ten of these pieces were stratigraphic maps from a single state. The "fossil fuels" also represented a large percentage of the student materials, but there again was a series of materials from one or two sources. The teacher topic "other minerals" was expanded by a series of booklets which accompanied films on the steel industry. That the "identification of rocks and minerals" had a moderately high percentage of occurence is magnified by the fact that these materials came from numerous sources.

One of the first things that many people think of when discussing minerals conservation is strip mining and reclamation, yet that topic was mentioned only once, in the general public materials. Suggestions as to "How do we make minerals last longer?" are mentioned only in teacher and general public, and then not to a great extent. In addition, not many materials described possible future needs or demands for minerals.

Thirty-two percent of the teacher materials contained reference lists and 72 percent contained teaching suggestions. In addition to this, nine percent of the material described workshops for teachers.

Materials on Plants

When conservation materials speak of plants, they speak of forests. In the student, teacher, and general public categories 77 percent, 70 percent, and 75 percent respectively, talked about forests or trees (See Table XXIX). Among the student material 47 percent was about "identification and dendrology" of forest trees. In the teacher materials more emphasis was put on the management aspects of forestry. The management topic in the student material dealt mostly with how to plant trees, although some were more detailed in their presentation of forest-management practices.

Only one percent, 13 percent, and 13 percent of the material contained information on agricultural crops. Four percent of student material was on "rangeland", and one-half of these were found in the soil category (this accounts for the pieces-analyzed being greater than the total pieces). All other plants, usually wildflowers, ferns, grass, and flowers in general, constituted only eight percent, three percent, and 13 percent of the total category.

Educational facilities described in the teacher category are mostly about school forests. In addition, about one-half of the material contains teaching suggestions and about one-fourth bibliographies and reference lists.

TABLE XXVIII. Percent of Titles on Minerals Treating Various Topics

	Audience		
Subject	Student	Teacher	General Public
Identification	25	18	24
Fossil fuels	40	27	33
Minerals other than fossil fuels	11	32	10
Geologic processes, stratigraphy	45	14	5
Paleontology	23	9	19
Strip mining and reclamation			5
How to make minerals last longer		9	29
Future needs		6	10
Suggestions for teaching		72	
Educational workshops		9	
Bibliography		32	
Total pieces	47	21	133
Pieces analyzed	44	22	21

TABLE XXIX. Percent of Titles on Plants Treating Various Topics

	Audience		
Subject	Student	Teacher	General Public
Forestry identification and dendrology	47	14	12
Forest products	14	22	17
Forest management statistics and research	23	30	26
Forest enemies other than fire	7	14	6
Tree development	11	11	6
Fire prevention and damage	19	22	3
Agricultural crops, food and other, description and management	1	13	13
Rangeland	4		1
Other plants	8	3	13
Glossary	1	3	
Bibliography and lists		24	
Teaching suggestions		49	
Educational facilities and programs		11	
Total pieces	189	65	706
Pieces analyzed	192	63	106

Materials on Animal Resources

A look-at Table XXX shows that our largest subject, animals, did not have a particularly unbalanced distribution of topics. In each audience two or three topics held nearly equal predominance. In addition, "wildlife in general" held one high spot. In the student material, birds, mammals, fish and other aquatic animals were within 12 percentage points of each other with 29 percent, 24 percent, and 17 percent respectively. In teacher material "general wildlife" (20 percent), "birds" (18 percent) and "fish" (18 percent) held the top places. In general public, "mammals" (25 percent), fish (25 percent), and birds (18 percent) lead the category. At no time did the lesser known animals, or even domestic animals have a large occurrence. The teacher material was conspicuous in its lack of material on mammals.

Although there was some implication that the general public material was for the sportsman, only about nine percent actually gave hunting and fishing tips.

Again as in the other subjects, only the general public material contained much about management or control. The student material, as usual, dealt mainly with identification. Teacher material had fewer suggestions and bibliographies in comparison to those in the other resource subjects.

Recreation Materials

Most of the recreation materials for all audiences dealt with how to perform and where to go for recreational activities (See Table XXXI). Very few pieces stressed the importance of recreation or the importance of establishing recreational sites and keeping them looking nice. In the student and teacher category (but much less so in the teacher) the emphasis was on how to perform the activities. Most of the 25 percent of the student material on hunting and gun safety was published by the National Rifle Association, and stressed firearm safety. The student watersports also stressed the safety aspects of the activities.

It must have been assumed by publishers that the adult general public already knows "how", as most of the recreational material in this audience tells them "where" to go to camp, hunt and fish.

The list of recreational activities found in student and teacher material were addressed to leaders and members of youth groups. There were many youth-group publications throughout all categories which listed activities in conjunction with a particular resource. For example there were materials in the student-animals category on activities to accompany bird study.

There were not as many pieces on camping as might have been expected. Student and teacher material was again directed to the youth groups. The general-public camping material described public camping grounds. The multiple purpose recreational areas were mostly public and private forests and reservoirs which provide camping, hunting,

TABLE XXX. Percent of Titles on Animal Resources Treating Various Topics

	Audience		
Subject	Student	Teacher	General Public
General wildlife	11	20	11
Birds	29	18	18
Mammals	24	2	25
Fish and other aquatic animals	17	18	25
Insects	4	7	6
Reptiles and amphibians	7	2	3
Domestic animals - pets	5		2
Cows and milk, farm animals	5	7	2
General animals	6	5	
Management and control	5	7	31
Glossary		2	
Bibliography		23	
Suggestions to teachers		41	
Total pieces	223	47	986
Pieces analyzed	208	44	175

TABLE XXXI. Percent of Titles on Recreation Treating Various Topics

	Audience		
Subject	Student	Teacher	General Public
Gun safety and hunting	25	25	21
Fishing - how and where	21		14
Trapping	9		1
Water sports - swimming, boating, canoeing, skiiing, etc.	21	3	8
Camping - skills and places to ...	6	10	13
Game preparation, outdoor cooking and menus	3	10	4
Multiple purpose recreation areas			13
Historical areas to visit			8
Importance of preserving wilderness		14	2
Importance ofrecreation			5
List of recreational activities	15	14	
Anti-litter and beautification and general outdoor manners	6	7	1
Total pieces	32	24	1030
Pieces analyzed	32	28	180

fishing, boating and other recreational facilities. They were not tallied again for each of their separate activities.

With the exception of the activities lists topics, the teacher material contained few teaching suggestions and only one piece contained a bibliography.

Miscellaneous Materials

Because this was the "left over" category (See Table XXXII), we did not expect to find very many topics which would stand out from the rest in number. The exception to this we knew would be "careers", "health and safety", and "air pollution", all of which were to be placed in the miscellaneous category during the crude sort. The two categories which had rather unexpected predominence were "youth programs" and "workshops and continuing education for teachers." The nature of this material varied, but most was conservation or general education oriented.

The 11 percent "conservation agencies" topic is not an accurate total since specific agencies were often placed in the category of the resource with which they were concerned. For instance, a publication about the United States Forest Service would be found in the plant category, and one on Soil Conservation Districts in the soil category.

Originally all periodicals were put in the miscellaneous category; however, many were found elsewhere. Because of this and the fact that periodicals have such a varied subject matter, we did not record them as a topic under this or any other category.

Few miscellaneous materials had suggestions for teachers, only seven percent, but there were bibliographies and reference lists in 31 percent of the materials.

TABLE XXXII. Content of Materials in the Miscellaneous Category

Subject	Stud.	Teacher	G. Public
Careers	43		
Health and Safety	13	13	29
Schools, Youth Programs inc. Camps Scholarships and Spec. Programs	13	51	
Science Education	9	4	
Historic Information	9	2	
Pollution (air)	1		14
Workshops and Continuing Education for teachers		20	
Bibliography		31	
Suggestions for teachers		7	
Conservation Agencies and Organizations			11
Total Pieces	133	193	490
Pieces Analyzed	128	45	56

Content of Materials in the General Category

By definition the general categories were to contain materials which give almost equal attention to two or more natural resources. During the analysis of content we found that this was not always the case.

Although the student audience had only 13 percent of its material in the general subject, 63 percent were actually general by definition. The other 37 percent dealt with "land as a resource" and "agriculture." Other topics which were incorrectly placed in the general category, were tallied in their correct category. Among these were materials on youth camps, careers, fair projects, rangeland, geology, fire and litter, and science education. Of the 26 pieces about soil and water, nearly one-third of them stressed soil much more than they did water.

The teacher audience had the greatest percentage of material in the general subject with 46 percent. Of these, 47 percent actually dealt with some combination of natural resources. These were mostly in the form of curriculum guides and source material. In addition to these were materials which expressed importance of and described educational facilities such as school forests, nature trails, museums and activities such as school camping and field trips. All of these topics imply general conservation but do not discuss natural resources as such. Teaching suggestions scored heavily with materials containing bibliographies or reference lists. A good deal of the material included "theory" on the importance of teaching conservation or resource use education. Content analysis found only six percent of the general public material in the general category. Of these only 20 percent belonged there, according to our definition of general. The rest was a miscellaneous assortment of land use, agriculture, and policy and theory of conservation related organizations and agencies.

When materials actually dealt with natural resources in general, they discussed the plants and animals most, soil and water next, and minerals least. Human resources were sometimes discussed in the general materials. Newer conservation topics such as air pollution and future energy sources were mentioned but only a few times.

Some Summary Remarks on Content of Material

In addition to confirming our hypothesis that there are imbalances in the scope of conservation materials, content analysis disclosed certain imbalances within the various resource categories. In nearly every category there is more emphasis put on the description of resources than on the management or even the explanation of conservation problems.

Soil erosion is probably the most talked about of all resource problems; water pollution would be a close second. There was very little material on how to make resources last longer; this was especially so for the non-renewables.

Plants and animal categories which constituted our largest percentage of material, say very little about management. Plants, which represent 18 percent of the total non-technical material, speak almost entirely of trees and forestry. It is only the general public and teacher material which mentions agriculture to any appreciable degree. The animal category, which contains 19 percent of the total non-technical material, mentions the vertebrates (usually birds and mammals) almost exclusively. We know that there are volumes of Extension material on entomology, yet a very small number of them were sent to us a conservation materials. The material which we did receive on insects was mostly on how to make a collection. Even more surprising was the fact that there were so few materials on domestic animals, either pets or farm animals. There was almost nothing on how to make plants and animals serve us longer or more efficiently.

According to the information we obtained during the analysis of content, conservation must mean:

1. To conserve plants and animals.
2. When conserving plants we must be most concerned with how to identify trees.
3. When conserving animals we must know the natural history of birds and mammals.
4. Soil conservation means stopping erosion.
5. Water conservation means meteorology, hydrology and pollution.
6. Recreation means where to go.

The above does not define conservation. It does describe the impression yielded by the examination of many many pieces of free and inexpensive material on conservation. It can be said to be the composite definition of conservation for the hundreds of producers of these printed materials.

CHAPTER XI — HOW GOOD ARE THE MATERIALS— QUALITY ANALYSIS

We collected a large and, we are certain, adequate sample of extant free and inexpensive printed materials related to natural resources. We were able to measure several characteristics quite readily: format, date, costs, quantities published, sources, and content. These measurements have been reported in the preceding chapters. Two major questions about these conservation materials remain: How good is the material? Are teachers using it? We may then be able to pinpoint or at least infer what characteristics of materials lead to the use of materials in schools.

Quality of sponsored materials has long been a concern of educators. An extensive literature has developed on "commercially sponsored" materials. Numerous sets of criteria have been developed for evaluating sponsored materials. Materials produced by governmental agencies have largely escaped the scrutiny to which "commercially sponsored" materials have been subjected. We wanted to compare conservation materials from all the kinds of producers; we wanted to find out whether or not there are differences in the quality of material produced by the private and the public sector among producers. A second objective was to find out whether the materials dealing with some resources are better than those dealing with other resources; we planned to compare qualities of materials dealing with each of the major natural resources. The third and related objective was to discover characteristics shared by the materials judged to be the best for conservation education.

Procedure for measuring quality

We believed that a shortcoming of the commonly-used systems and criteria for judging quality or acceptability --commonly the quality test is called a "screening" process to prevent objectionable materials from being used in classroom-- is that the judgment or test is applied solely by school people. We planned a system that would embrace the range of quality judges from conservation specialists, representing the producer view at least to some degree, to classroom teacher. We provided for three groups of judges: conservation specialists, professional educators (administrators, supervisors, professors, etc.), and classroom teachers.

We hypothesized that the principal cause for the failure of the criteria approach to screening or scaling materials was that criteria were too cumbersome to be effectively or consistently applied. Criteria must be defined but the more carefully they are defined the more they will be ignored by those judging materials. That is, each judge tends to consciously or unconsciously create his own criteria and scales. We therefore, eliminated criteria, reduced scale range, and forced judges to set own scales.

We decided to use an adaptation of the "Q-test" to develop scale for qualities judged. Each judge would, by comparing a variety of materials, develop his own scale from poor to good. That is, each judge would set his own boundaries for those three ratings. This, we were certain, is what judges do anyway regardless of criteria provided.

Each judgment of quality, or some other aspect of the material, would be rated as poor, mediocre (i. e., average, fair, etc.), or good. We offered only this three-point scale and we avoided defining limits or boundaries. We did provide opportunity for a null rating which we treated as a zero rating. We made a "secret" provision by which a judge would rate a piece as outstanding: judges were asked to write very brief comment on the judging form for any "good" pieces they considered exceptionally so. Wherever such comments appeared we recorded the value as four, an extension of the zero-to-three scale ostensibly provided by the forms used. (See "Instructions to Judges" and judging forms used, Appendix E-1 and E-2).

We used three sets of judges

We used three sets of judges, each set composed of three persons, each set from a different segment of the series of people who do judge these materials and each set concentrating on those aspects of quality most important to its members. The three aspects were informational quality (called general quality or just quality), educational potential, and school use. Each set of judges would be comprised of three different persons. All judgments would be made independently, that is, each judge would make his own evaluations without knowledge of what other judges may have said. We avoided the committee systems.

Judgments common to all judges

All judges were asked to first judge appearance of the piece. Thereafterthey were to rate the "general quality" of the piece. This was the final and major judgment for the resource specialists, called "quality judges:" it was one of the preliminary judgments for each of the other two sets of judges. Geographic area in which a piece was applicable was a common judgment and grade level to which most suited was common to the professional educators and the classroom teachers. All judged a group of common or "control" pieces from which each judge's rating scale was weighted; more on this later.

Quality judging

While all judges made an evaluation of general quality, one set of judges concentrated on this aspect. These judges were conservation specialists. They included college professors of conservation and conservation-related courses, conservation-agency technicians, and outstanding graduate students in conservation. (See Appendix E for list of judges.)

The forms for quality judges made provision for rating bias, informativeness, accuracy, currentness, and clarity. Judges were instructed to thereafter, and without attempting to weight or accumulate these ratings, rate the quality of the piece.

All pieces to be judged were marked with the blue signal tag mentioned in Chapter II, the signal indicating that the piece was a part of the analyses sample. On the tag were provided nine labelled spaces for judges' initials. This was the signal to indicate whether or not more judgments were needed on a piece of material.

Educational-potential judging

Professional educators were selected to judge the educational potential of materials. These were professors of education, curriculum coordinators or instructional supervisors of school systems, and school principals. Ten persons contributed to this phase of judgments. All were selected on basis of being judged good or outstanding by peers and/or superiors.

Educational-potential judges were asked to rate appearance and then general quality. They were asked to decide to what geographic area the material might apply: nation, region, state, or local. For all subsequent judgments they were to consider themselves as working in the geographic area to which the material applied. Thereafter they were to judge group or audience to which material is primarily directed and, if useable by students, for what school level and subject area it best applies. Finally they were to rate the educational potential of the piece.

It may now be admitted that the principal reason for ratings on aspects other than appearance and general quality for all judges, educational potential for professional educators and teacher and student use for teachers, was to prompt examination of the material.

School-use judging

Three classroom teachers were to judge teacher-use and student use of each piece of material. One of these was an elementary teacher, the second a secondary science teacher, and the third a teacher of social studies at the secondary level. Other judges were interchangeable in each set; teachers were not. Teachers were selected on basis of having been judged as outstanding by superiors. Thirteen teachers served the project. All had Masters degrees or equivalents. All had had at least five years of teaching experience. Demonstrated interest in conservation was not a criterion for selection of either principals or teachers; we wanted to find out what good school people thought of these materials.

Teachers, like the professional educators, were to judge appearance, general quality, and geographic area in which applicable. Thereafter they were to rate, by checking within a series of choices from none to much, their own use of the piece. If they next judged the piece useable by students, they were to indicate school level and subject. Finally, they were to rate the use they would have their own students make of it; for this final judgment each teacher was instructed to make the judgment for the entire school area that the teacher represented, i. e., all elementary grades, or all secondary sciences, or all secondary social studies.

The control judgments and weighting of judgments

After a judge had worked for at least one-half day but no more than one whole day (a day being eight hours, not usually one calendar day), he was directed to judge the "control" pieces. These were 20 pieces, each from a different sorting category, each randomly selected. Judgment forms for the control were kept separate from those to be recorded for each piece except that duplicate cards were prepared for each of the first three of each set of judges to evaluate the piece.

After a judge had completed his tour of duty he was again asked to judge the control. This was to get a measure of consistency. This was not done for all judges but we did get enough of these "re-evaluations" to determine that consistency was well within the standard error.

We used a system for the weighting of judgments which would, in effect, shift the distribution curve for each judge's evaluations toward the center. The judgments encoded for data cards were recorded as integers, 0-4. But as was expected, judges varied in their "standards." The system and logic for the weighting procedure was as follows:

1. Assume that a 5-10-5 distribution of the 1, 2, 3 ratings is the norm.

2. Rate as 2 (fair) as twice the value of a 1, a 3 as 3 x 1, a 4 as 4 x 1. Call the weighted value of 1 $\underline{x}$.

3. Set the cumulative value of the set of judgments at any figure; we arbitrarily set it at 100 to cause a normally weighted rating of 4 to become 10, i.e. to set up a ten-point scale.

4. Use formula to compute value of $\underline{x}$.

$$a\,x + b(2x) + c\,(3x) + d\,(4x) = 100.$$

a = number of 1 ratings given in control
b = " of 2 " " " "
c = " of 3 " " " "
d = " of 4 " " " "
x = weighted value of a "poor" rating,
2x = " " " " "fair" "
3x = " " " " "good" "
4x = " " " " "outstanding"

Example: Judge Hanselman's distribution of ratings for the control was 3, 11, 6:

$$3x + 11(2x) + 6(3x) = 100$$
$$x = 2.33$$

Thus, for Hanselman: poor (1) = 2.33; fair (2) = 4.66; good (3) = 6.99; outstanding (4) = 9.32.

Example #2: Erickson's distribution of control ratings for quality was 0, 9, 11: $9(2x) + 11(3x) = 100$

$$x = 1.98$$

Thus for Erickson: poor = 1.98; fair = 3.96; good = 5.94; outstanding = 7.92.

Justification for shifting each judges distribution of ratings toward the center is amply furnished by a tally of the distribution of quality ratings given the 20 control pieces by the 29 judges: 0, 45, 223, 307, 5. Translated to an average for each judge this is 0, 2, 8, 10, 0 (to tenths it is 0, 1.6, 7.7, 10.5, 0.2). Weighed value for $\underline{x}$ for all quality judgments is 2.02 (tables of weighed judgments are in Appendix E).

Logistics of judging

There were 1,541 pieces in the analyses sample, that is 20 percent of total titles randomly selected for several measurements. Nine judgments on each piece would have required 13,500 sets of judgments. This, at 50 sets or pieces per man day, would have called for 270 man days of judging. Our resources would not reach that far but we did get around 12,000 done.

Most judges were employed as consultants for a minimum of four man days of judging. No judge worked more than ten man days. The exceptions were members of the project staff three of whom did more than ten man days of quality judging. Approximate numbers of pieces rated by each judge is recorded in the list of judges in Appendix E-1.

We were able to get complete sets for all judgments on all the teacher and student materials in the sample. We also got complete sets, that is three judges in each of the three sets, for the general subject category for public and manager materials. Thereafter we got a complete set of teacher judgments for everything but only a minimum of two quality judgments for all the rest of public and manager materials. On educational potential we managed to get at least two judgments for the rest of public materials, i.e. other than general, but only one such judgment for the technical materials other than general. Mean values calculated by computer for each set of judges take these omissions into account.

Recording of the data

All items called for on each judging form were encoded and entered into the code books and later transferred to data cards. Data Deck No. 5 recorded the several judgments made by each of the quality judges. Data Deck No. 6 recorded judgments of the professional educators and the three teachers. (See Appendix G for key to data cards).

Two more data decks for judgments were developed as printouts of the computer programs which substituted weighted values for the judgments encoded as integers. One of these decks (Deck No. 12) recorded mean quality judgments for each of the three sets of judges, individual judgments for each of the three teachers, and "grand mean," the mean for all three sets. Data Deck No. 13 recorded the same array for all appearance judgments.

Analysis of results

We were able to afford the development of three computer programs to develop and analyze the results of 12,000 sets of judgments of 1,541 titles. The first two of these, as just stated above, substituted weighted values for quality judgments, computed the mean for each set and the overall or grand mean. This "Grand mean" (Q_{Gr}) is the "concensus rating" for quality. The same computer program developed the same array of weighted values for appearance ratings (A_Q, A_E, A_T, and A_{Gr} for quality, educational-potential, and teacher judges, respectively).

A stepwise regression program was adapted to compute means, standard deviation, correlation coefficients, and coefficients of regression. BMD02R - Stepwise Regression Version of November 12, 1964, Health Science Computing Facility, UCLA. This program utilized the arrays of weighted values for quality and for appearance ratings to give us the factor for predicting the concensus rating for quality on basis of each of the three sets of judges. It simultaneously gave us the relationships and prediction values of each set of appearance judgments for predicting either grand appearance or grand quality.

How did judges rate the quality of materials?

The material for managers rated slightly higher in quality than did that for the other audience groups. The judging system yielded a group mean of 5.02 for it while all the other groups had mean quality ratings of 4.67 ± 0.04. (See Table XXXIII). Judges apparently considered the technical material less variable in quality; the standard deviation was 0.79 as compared with an average standard deviation of 1.01 for the other audiences.

When one examines grand-quality means (Q_{Gr}) by sorting categories, it is noted that material on minerals is rated most highly in teacher and student materials. In fact, the difference is marked one. (See Appendix Table E-7). Material on water is the best among public materials while material related to plants is given the highest rating among technical materials.

Quality judges, the conservation specialists, tended to rate quality below the other sets of judges except for technical materials. Those they rated more highly than did other judges. It may be said this was to be expected. The data then yield supporting evidence but some other commonly-held views may not be so supported.

Table XXXIII. Mean ratings of quality and appearance of materials for the four audience groups

Audience Group	Quality Mean	Quality SD	Appearance Mean	Appearance SD
Teachers	4.71	1.07	4.92	1.21
Student	4.63	0.97	5.11	1.19
Public	4.65	0.98	4.90	1.15
Managers	5.02	0.79	4.86	1.04

In all instances the mean given the material in the miscellaneous category by the resource specialists was the lowest of their quality ratings. It was markedly low for miscellaneous materials for teachers. These included curricular materials for science, for health, for social studies, etc. (see "Content of the Miscellaneous Category" in Chapter X). Apparently the conservationists were rather severe with this material; often they said, "This is not conservation material."

Standard deviations of around 1.00 on 220, 290, 720, and 300 pieces (teacher, student, public, and manager groups, respectively) with value ranges being from 0.00 to 8.50 suggests that there was a considerable range of quality judgments. Appendix E-12 lists the titles considered outstanding as judged by the quality-rating system. Of each piece in that 10 percent of the tested material we can say that nearly all nine of the judges evaluating a piece had to have considered it good.

How did appearance rate?

Student materials were rated highest on appearance while the technical materials were rated lowest. This is the reverse of the ratings for quality. The mean appearance rating for the technical group was 5.11 whereas the other three audience groups were close together at 4.89 ± 0.03 (Table XXXIII). Material on minerals again stand out with markedly the highest mean among both teacher and student materials. Plant materials appear to have been rated slightly better for appearance among the technical materials. Materials on recreation, surprisingly, were given the lowest rating for appearance in five of the 12 judge-subject sets. This made us curious about the average appearance rating for each subject across all audiences. We computed both weighted and unweighted average appearance ratings for each of the subjects;

materials on plants rated highest followed by minerals and then the miscellaneous materials. The lowest was recreation.

All materials varied more in appearance ratings than they did for quality; standard deviations were over 1.00. Again the technical materials varied least and teacher materials varied most. (See Table XXXIII).

Educational-potential judges were consistently lowest in the ratings given appearance as judged by audience means for each set of judges. (See Appendix Table E-8). The average of their mean judgments, if one may express it so, was 4.69 while that for conservationists was 4.99 and for teachers was 5.12. It may be however, that on this set of judgments the conservationists were less forthright than the educators; the comments submitted by judges in writing upon the completion of the tour of duty contain this remark in substance from four of the six conservationists, "The technical materials did not look as good as the other groups of materials but they looked good enough for their purpose."

Characteristics of the most highly rated materials

In Chapter VI we discussed some of the characteristics of the materials most highly rated for appearance: they are substantial, i.e. booklets, not leaflets. They are illustrated with drawings as well as photographs. They have color. They may or may not have a cover, i.e., they may be "selfed" to use the term of the printing trade for a publication the cover of which is produced from the same fold or sheet of paper as is the body of the publication.

When we examined characteristics of the pieces most highly rated on quality (Appendix E-11), we discovered that 80 percent do have covers. Glossy paper, good photo reproduction, and color are common. "Bleed out" of photographs is common, i.e. permitting a photo to run all the way to the edge of a page. Line drawings are found in most pieces. There is a relationship between the appearance of material and quality ratings given it. This again is considered common knowledge but, we dare say, much of the free material on conservation fails in the application of this knowledge. How does this relationship test?

Relationships between judgment sets

Coefficients of correlation between mean appearance judgments (A_{Gr}) and the concensus or mean quality judgment (Q_{Gr}) are 0.70, 0.62, 0.56 and 0.52 for the four audiences respectively. (See Appendix Table E-9). Correlation is progressively lower as we move from teacher materials to technical ones; it drops to the 50 percent level for the latter. As the three sets of judges rated appearance and general quality of each of the 1,500 test pieces they were either least affected by appearance when evaluating technical material or there really is a lower correlation between opinions on appearance and quality as the information level of material goes up. We do not prove that appearance and quality are causally related but our data do support the inference that appearance tends to affect opinion on quality.

An inspection of the correlation matrix for all sets of judgments of the materials for one audience, teachers, reveals several significant relationships. The coefficient of correlation between A_{Gr} and Q_{Gr} is 0.70 (See Table XXXIV). We later learn, however, that grand appearance mean is not a good predictor of grand quality; the regression coefficient is 0.70 with standard error estimate of 0.77, 3/4 of one standard deviation. For teachers the correlation between A_T and Q_T is 0.71 and for the professional educators the coefficient of correlation between their ratings of appearance and their rating of quality is 0.70. These represent the school end, the market as it were, for free and inexpensive materials related to conservation.

Conservationists are least affected by appearance

Coefficients of correlation between judgments of appearance and of quality are lowest for the conservation specialists; it is 0.48 in both teacher and student materials and drops to 0.34 and 0.36 for public and technical materials respectively. (See Appendix Table E-9 for a matrix of correlation coefficients for all audience groups). It must, however, also be noted that correlation falls off markedly for all sets of judges when we shift from teacher and student materials to the other audience groups; there the coefficients fall below 0.40 for both conservationists and educators. For teachers $\underline{r}$ falls to 0.58 for public materials and 0.44 for technical ones.

Conservationists are the best predictors of quality rating

The coefficient of correlation between the conservationists' rating of quality and the concensus rating is a high one, 0.88. It is also the most consistent of all correlations in the matrix (Appendix E-9), it stays at 0.88 for three of the audience groups and falls off to 0.87 for the technical group. We can say that it does not change with audience. The coefficient of regression for Q_Q as a predictor of Q_{Gr} is also 0.88 for teacher materials with a standard error of 0.51, one-half standard deviation. Regression coefficient for $Q_Q: Q_{Gr}$ stays the same for

TABLE XXXIV. Correlation matrix for all sets of quality and appearance judgments for materials in teacher group

Judge set	#	Values of r, for each factor, at 5% level 1 A_Q	 2 A_E	 3 A_T	 4 A_{Gr}	 5 Q_Q	 6 Q_E	 7 Q_T	 8 Q_{Gr}
Appearance									
by qual. judges(A_Q)	1	1.000	0.798	0.736	0.939	0.476	0.604	0.571	0.650
by Educa. Pot. (A_E)	2	0.80	1.000	0.753	0.923	0.384	0.702	0.592	0.633
by Tchrs. (A_T)	3	0.74	0.75	1.000	0.886	0.408	0.602	0.711	0.651
Grand mean (A_{Gr})	4	0.94	0.92	0.89	1.000	0.460	0.689	0.671	0.698
Quality									
by qual. judges(Q_Q)	5	0.48	0.38	0.41	0.46	1.000	0.423	0.426	0.880
by Educ.Pot.Jud(Q_E)	6	0.60	0.70	0.60	0.69	0.42	1.000	0.598	0.747
by Tchrs. (Q_T)	7	0.57	0.59	0.71	0.67	0.43	0.60	1.000	0.741
Grand mean (Q_{Gr})	8	0.65	0.63	0.65	0.70	0.88	0.75	0.74	1.000

all audience groups; standard error decreases to 0. 39 in technical materials. (See Appendix Table E-10).

Calculations of step-wise linear regressions always selected Q_Q as the best predictor of Q_{Gr}. As a second step educational-potential judges were selected for three audience groups and teachers for the technical materials but it was also apparent that they were so nearly of the same correlation value that they were practically interchangeable. Regression coefficients for the second step, i. e. using both conservationists' and educators' judgments of quality to predict concensus quality rating, were 0. 97, 0. 97, 0. 96, and 0. 97. Standard error estimates were now down to one-fourth standard deviation, 0. 25, 0. 24, 0. 26, and 0. 20, a very acceptable accuracy analagous to predicting letter grades to within a quarter of a grade level, e. g. B or B+.

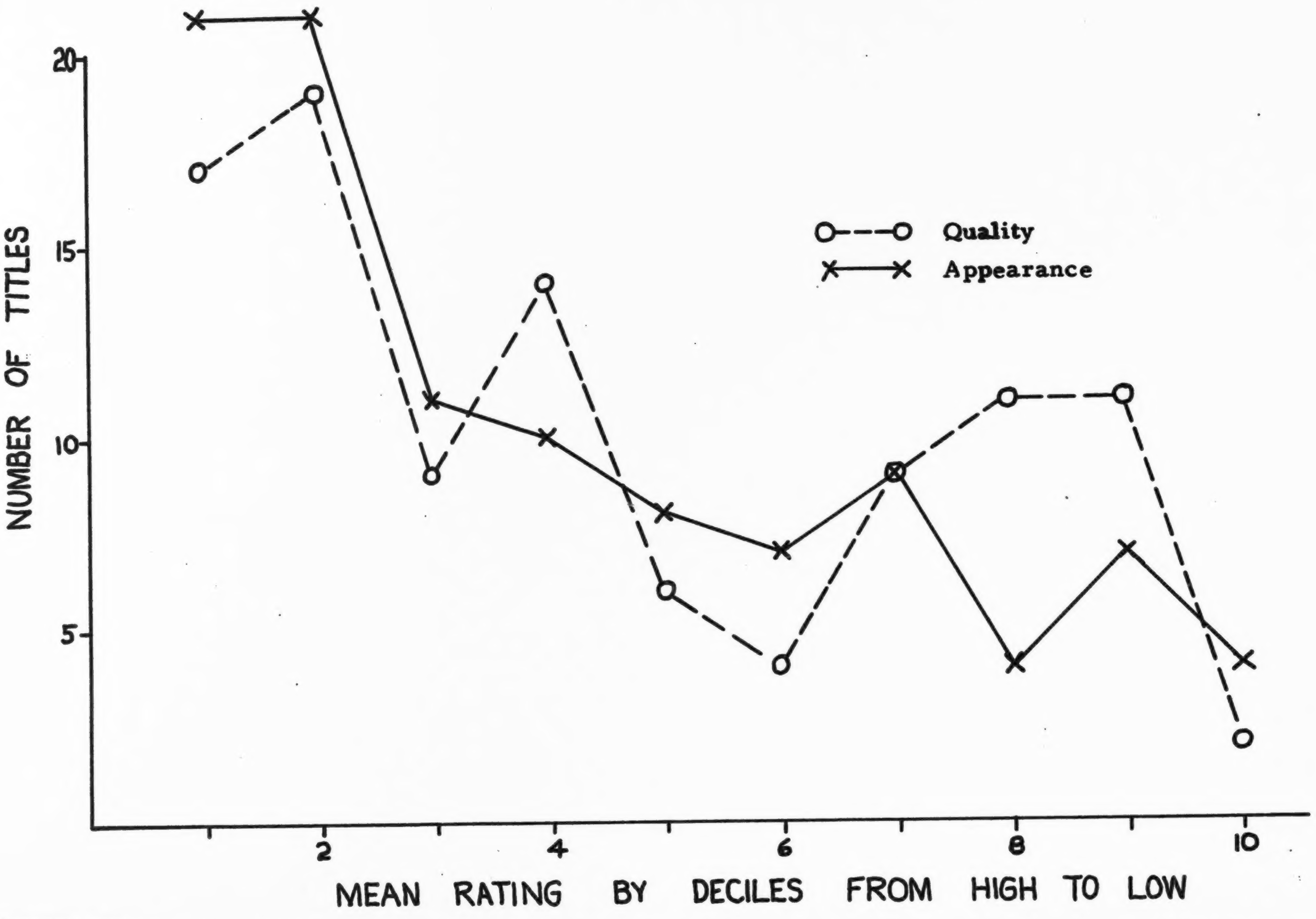
This information has a practical application should anyone wish to use our system or some modification of it for developing quality ratings of materials. If accuracy to within the equivalent of one letter grade is acceptable, use only a set, such as three, resource specialists; use a regression coefficient of 0. 9. If greater accuracy is desired, add a second set of judges, either teachers or professional educators other than classroom teachers. The regression coefficient now closely approaches the perfect 1. 00, it being 0. 97; the standard error is small enough to predict the decile of rating.

It had occurred to us that appearance judging can be done much faster than quality judging. The simple "Q-test" could be used to develop a relative scale for judging appearance. Persons for this judging could be obtained more cheaply than resource specialists. What then, we wondered, is the regression coefficient for using appearance ratings to predict quality rating. They range from 0.52 to 0. 70 ; they are not consistent across the audience groups. Worse, the standard error estimates range from 0. 67 to 0. 81 (Appendix Table E-10). There are relationships between appearance and quality but the coefficients of regression and levels of confidence between appearance ratings of sets of judges and consensus judgment of quality are not good enough to use appearance ratings to predict quality rating.

What is the relationship between material quality and teacher use?

Within the judging system we placed two sets of judgments intended to discover whether or not the teacher, looking carefully at the material, decided that this is a piece of which she would make some use. One question asked what use she would make of the piece for herself; the second asked what use she would have her students make of it. We found that a positive answer to the second question always meant a positive answer to the first but that, as expected, one might often answer

Figure 11 Distribution of the 102 titles teacher judges indicated they would use over the range of quality and appearance ratings



positively to the first without visualizing having students use the material. We therefore elected to use answers to the first question as a indicator of use probability.

To this question the teacher had five alternative answers: (1) none, (2) give it to another teacher, (3) file it with my source material, (4) use if for displays, bulletin boards, or other special uses, (5) use it regularly in my teaching. The first two are negative responses, the third is non-committal, the last two indicate a decision to make some use of the material. We used Holarith sorting to find the pieces in the analysis sample that two or all three of the three teachers judging the piece indicated they would use. There were 102 such pieces, 6.6 percent of the sample. The teachers were significantly selective among the audience groups selecting 8.6 and 10.3 percent of teacher materials and student materials respectively, 6.8 and 1.0 percent of public and technical materials.

Figure 11 graphically reports the relationships between quality ratings and numbers of pieces selected for use by two-thirds or more of the teacher judges. Teachers do select more pieces of higher quality than of lower quality. There is a direct relationship between quality of material and its acceptance or use by teachers. There are some puzzles raised by the data in Figure 11 which indicate that teachers said they would use some pieces which had received a low quality rating--and to land in the lower deciles of the quality range the same teachers that said they would use the piece must also have rated its quality as low. We identified all the pieces selected and find that nearly all of the pieces at the lower end of the quality range are visual aids or craft materials, e.g. assemblies of cut-and-color materials for preparing posters.

The same Fig. 11 also plots the relationship between appearance ratings and the number of pieces selected for use for the same 102 pieces.

There are relationships between appearance and quality. There is a fairly high correlation between opinions on quality of material and opinion on appearance of the same material when judged by educators including classroom teachers. We calculated the coefficient of correlation between quality decile and appearance decile for the 102 pieces the teacher judges said they would use; we find it to be 0.62 for an accuracy within one decile. This is significally high.

We do note, however, that the slope of the appearance factor line in Figure 11 is steeper than that for the quality line. We conclude from the data graphically presented that appearance outweighs quality as a factor in determining whether or not teachers will use free and inexpensive printed materials on conservation.

CHAPTER XII — ARE TEACHERS USING THE MATERIALS?
TEACHER-AWARENESS TEST

by

Victor J. Koser and Benjamin R. Ahner*

Other phases of the project have determined readability level and have measured appearance, quality, and other characteristics of free and inexpensive printed materials on conservation. A crucial question remains: What effect do these characteristics or factors have on teacher awareness and use of the materials? Likewise, does the system by which the materials are distributed affect teachers' awareness and use of the materials? Some among the characteristics named above are known for specific pieces of material but as yet unanswered is the question, are conservation materials fulfilling their objective? That question we did not envision answering but we did assume that the materials would have to be used before it would be at all possible to investigate the ultimate question. The "best" conservation material is not of value for education until it is used by some audience.

Objective of the teacher-awareness test

The objective of the teacher-awareness test was to find out which kinds of materials, which characteristics of materials, and which distribution systems would appear to be the most effective for getting teachers to make use of the materials. We assumed a positive relationship between a teacher's being aware of material and a teacher's making use of material. We set our target on the measuring of awareness and we intended to determine the relationships of material quality, its appearance, and its suitability to school use to awareness as measured. We further intended to determine what effects differences in distribution systems might have on teacher awareness of materials.

Development of the test instrument

The geographic areas which had to be included forced us to use a questionnaire to test teacher awareness of materials. We did, realizing that questionnaires are not as highly regarded as are other means of obtaining information such as interviews, devote considerable effort and six months of time into the development and testing of the test instrument. We dressed it up with a line-drawing cover on colored 70-

---

*V.J. Koser, graduate student in business administration, Ohio State University, and B.R. Ahner, graduate student in sociology, Indiana University, were research assistants to the project.

pound cover stock and we devoted considerable effort to packaging and addressing it.

We wanted information about the respondent teachers as well as indications of their awareness of specific materials. Biographical questions form Part I of the questionnaire (Appendix F-4). Questions concerning the teachers background, education, experience, and assignment were posed to see if certain characteristics of teachers may be related to their use of supplemental materials. The last half of Part I was designed to develop a profile of conservation attitudes and familiarity with conservation materials. The teacher was asked about the relevancy of conservation to her subject, the participation of the teacher and the school in conservation-related activities, the extent to which she uses conservation materials, the quality and adequacy of conservation-education materials, the number of conservation publications the teacher possesses, and the principal source of such materials.

Part II seeks to measure teacher awareness and use of specific publications that have different degrees of quality and appearance, as rated by the project system. It further intended to test these within a range of distribution systems. The questionnaire presented miniature reproductions of the covers of specific materials, some state and some national, selected for the test (Appendix F-4). The first two questions about each piece require that the teacher be familiar with the content of the piece to choose correctly among statements on content offered. Thereafter several questions were intended to further measure the degree to which the teacher knows the piece portrayed. They asked about readability, manner in which used, location of copies in the school, and avenue by which the publication was obtained.

Selecting the publications to be tested

Publications were selected to represent each of the major groups of producers: government agencies, organizations and industry. Both state and national levels were to be included. We chose to present 14 national-level publications and, for each of the states to be sampled, eight state-level publications. The state-level publications were made the center folds of each questionnaire. This pagination arrangement was an essential economy; it gave the alternative of using four, eight, or twelve state-level publications. We chose that which would allow us to test a few more national pieces than state pieces. The publications represented various degrees of appearance and quality. (See Appendix F-4 for list).

Selecting the states

Missouri was selected, from among the twelve states in which we had visited producers of conservation materials, to represent the optimal distribution system. Field personnel of the Missouri Conservation Commission (15 ± 1 of them) visit schools to offer assistance for teaching conservation and to distribute conservation materials. The Conservation Commission has employed education specialists in the production of free materials for schools. The Commission has been doing these things for so long that it has largely displaced other state-level producers of such materials and has been accepted by the State Department of Education as the state's conservation-education arm.

Minnesota was selected as representing a very restrictive system for the distribution of materials. Minnesota established one governmental division to be the sole distributor for all state-agency publications. A teacher or school, desiring a publication, sends required payment to this state Division of Documents. Neither the Department of Conservation nor the Division of Documents publicize or extensively promote state-level conservation publications. Minnesota's system represented the extreme of restrictive systems. Conservation agency offices were seldom able to give copies of their own publications to our visitor; this, we were told repeatedly, was also the case with in-state requests for materials.

Ohio, the third of the states selected, represents the more nearly typical of distribution systems, the virtual absence of any clear system. Although materials are generally free, there exists a number of independent distribution channels. The main distributors are the State Department of Education and the Department of Natural Resources. Some divisions of the latter have been independent distributors. There are many other producers and distributors. We had hypothesized that the development of one major center for instructional materials would, by creating a recognition of that source, be an asset for the distribution of free materials. Ohio, like most states, has no one such center.

Procedures for getting response

Structured closed-end questions were used because they would take relatively little of the respondent's time and because the answers could readily be recorded for analysis. The length of the instrument was reduced after testing to require no more than 15 minutes of a respondent's time. References were used for guidance in structuring questions, among them the most helpful were Stanley L. Payne (1951) and Harper W. Boyd, Jr., and Ralph Westfall (1964).

A package of questionnaires adequate to cover all specified teachers in a school was mailed to the principal. A covering letter was personally addressed to each principal. The distribution of questionnaires to teachers was made a responsibility of the principal. The teacher questionnaires directed that they be returned to the principal. A large envelope, return addressed and with postage stamps affixed (using blocks of stamps instead of one large-denomination one), was enclosed.

Pre-testing the questionnaire

Early versions of the instrument were submitted to conservation-education students and to teachers who had attended the Ohio Conservation Laboratory (summer school in conservation education). Approximately 75 copies of what was believed to be an acceptable version were submitted to three Worthington (Ohio) schools, two elementary and one secondary, to test the instrument. It appeared short enough and adequate for its purpose but its administration revealed the need for a companion questionnaire for the principal. This instrument (See Appendix F-5) was developed to obtain data on the school and also information about the principal's attitude toward and interest in conservation.

Selecting the sample

The sampling procedure for selection of schools in three states, Ohio, Minnesota, and Missouri, to which questionnaires were sent can be termed Stratified Proportional Random Sampling. The total sample area or universe (all schools within a 140 mile radius of the capital city in each state) was stratified by: distance from the capital city (0-140 miles); geographical location (north, east, south and west of capital city); degree of rurality (population characteristics); and type of school (elementary and secondary). Stratification with these characteristics was justified on the grounds that these characteristics were thought to influence the distribution systems for natural-resource publications, are readily and accurately obtained, and that the efficiency of sampling would be greatly increased.

The procedure for stratifying the sample areas was to draw two lines perpindicular to each other through the capital city in each state. This divided each state into sections that were north, east, south and west of the capital city. Each section was then divided into three equal segments (40 miles wide in Ohio, 50 miles in Missouri, 60 miles in Minnesota). The increase in radius of segment arcs is because of different sized states, distribution of population, and location of the capital city (See Appendix F for stratification maps).

For the "degree of rurality" stratification, two counties in each segment were selected on the basis of population, nearness to or containing a metropolitan area, and their location in the state. One county was designated as the "rural" representative of that segment on the basis of lower population and distance from a metropolitan area. The other county was designated as a metropolitan influence county on the basis of containing or being close to a metropolitan area. By this method, 20 counties in Ohio, 14 counties in Minnesota, and 17 counties in Missouri were chosen from which to draw our final sample. This is 23 percent, 16 percent and 15 percent respectively of the total counties. County was the unit chosen because school data are reported by county.

The next classification for "degree of rurality" was small cities. These were cities with populations of about 10,000-50,000 that were evenly distributed throughout each state. The last classification for "degree of rurality" was "large cities." These were the largest cities in each state (See maps for locations, and Table 1 in Appendix F).

Schools were then selected by "proportional random sampling" from each county and city in the sample. The first proportion calculated was that of elementary to secondary schools. The questionnaires allocated for each state (approximately 3.5 percent of the number of teachers in each state) were divided accordingly. (See Table 2A). The proportion of elementary to secondary schools for the entire state is very close to the proportion of elementary: secondary schools in our sample area. (See Table 2, Appendix F).

The next step was to find what proportion of each of these two groups of questionnaires (elementary and secondary) would go to the rural, metropolitan influence, small city, and large city schools in each state. (See Table 3, Appendix F). These percentages times the number of questionnaires allocated to elementary and secondary schools gave us the number of questionnaires allocated for each category. (See Table F-4).

It was necessary at this point to calculate the number of teachers per school for each category so that the numbers in Table F-4 could be translated into the number of schools to be selected. (See Tables 5, 6, 7, Appendix F). By dividing the number of questionnaires allocated for each category by the average teacher/school figures for each category we obtained the number of schools in each category to which questionnaires could be sent. (See Table F-8).

After the number of schools had been determined in this manner, a continuous listing of all the schools in each category was drawn up from which the particular school could be randomly selected.

Final figures for actual number of schools and actual number of teachers to which questionnaires were sent differ because of adjustments made due to lack of or extra questionnaires when the printing of the questionnaires was completed. For a comparison of calculated proportions versus actual proportions see Table F-9. For the actual number of questionnaires sent to each category see Table F-10.

Mailing the questionnaire

The 3,647 multilith questionnaires were mailed to Minnesota, Missouri, and Ohio on May 19th and 20th. The envelope and letter were addressed personally to the 274 principals. The instructions requested his cooperation in filling out the principal questionnaire and the distribution of the teacher questionnaire. Elementary principals were asked to distribute only to teachers of grades 1-6 (or 8) omitting kindergarten and special teachers; secondary principals were asked to distribute only to teachers of sciences and social studies. The interim report of the project was enclosed to engender the principal's interest and ehlp solicit his cooperation. A return-addressed, stamped envelope was provided to facilitate sending the questionnaires back.

Response

The overall response was 33 percent; Ohio, 34 percent; Minnesota, 43 percent; Missouri, 22 percent. (See Table 11 in Appendix F for details on response and F-1 for a list of schools contacted.) Early school closings in Missouri probably accounted for that state's lower response. Several hundred questionnaires were returned unused from all three states. We did get 1,184 completed teacher-awareness tests back from 142 schools. In addition we had 98 more as tests and controls. The 1,184 tests returned gave us slightly over a one-percent sample of the universe surveyed.

Encoding the data

One data card encoded the information from the principal's questionnaire; we designated it Data Deck No. 0. (Appendix G contains the encoding key for all data decks). The encoding of answers to all questions in the teacher questionnaire required three data cards. The first card encoded Part I of the teacher questionnaire information about the respondent, and answers about the first five national publications; the second card recorded answers on the eight state-level publications; the third card encoded answers concerning the remaining nine national-level pieces. Sometimes the third or even the second card was not required, the respondent having answered negatively. The three cards for each teacher became Decks 1, 2, and 3 respectively.

The computer program

For each of the 22 publications being tested an awareness score was to be developed from answers to several questions. If a teacher correctly selected from among the choices describing content of the publication pictured, five points were to be credited to the awareness score; if she selected wrongly, three points, and if she indicated recognition without being willing to try to indicate content, one point. To either of these three basic portions of the awareness score, two points were added if she made any judgment with respect to its readability level. One to three points were added depending on knowledge of the location of copies (one for one location, two for two, and three for three or more places), and one was added if she recalled the source or means by which she obtained a copy. The maximum awareness score for a publication thus becomes 12 and a "perfect" score for a respondent would have been 264.

A computer program was outlined to develop an array of the 22 awareness scores for each respondent, a total for the eight state-level publication, a total for the 14 national-level pieces, and a total awareness score for the teacher. The array so developed was to be subtotalled for each school and a series of mean scores developed by dividing by the number of respondents from the school. A school awareness mean was to be thus developed. The program was to yield mean teacher scores and mean publication scores for each school and, by group summations, to develop the same means for a group of schools such as elementary schools in large cities, etc.

Next, the program outlined would have produced totals and means for teachers, schools, and publications for the state. It was to produce card printout of the teacher awareness score on a card carrying the biographical information about the teacher; it was to produce card printout of school awareness means on a card carrying school information from the principal's card. Holarith sorting would have tallied some of the data on these printout cards.

Finally, using the printout cards as data input, a stepwise linear regression program would be used to search for factors having prediction value. It was to test the relationship between school location and teacher and school awareness scores, etc.

The programmer it fell our lot to obtain did not get more than a part of the very first portion of the needed computer program developed. That was completed on the eve of the end of the project. The program was not run until some days later. We can report the data we did obtain plus that we had developed by Holarith sorting.

Awareness scores were low

Awareness scores, as developed from the answers received, were low. Only 17 out of 1,270 teachers tested scored more than 100 points out of the possible 264. Six of these were scored by members of a comparison group, 36 alumni of the Ohio Conservation Laboratory, a summer conservation workshop for teachers. The highest score (179) was made by an Ohio social studies and English teacher, who indicated having been a school librarian. The mean scores for the teachers in the three states range from 11.3 to 19.1 but medians and modes lie below the mean. (See Tables XXXV and XXXVI). When the scores ranging from 0 to 179 are seriated by 10-point class intervals, the lowest interval is the model one for all three states and is also the one containing the median for one state, Ohio (See Table XXXV). Zero scores are abundant, 270 of them or 21.2 percent. The majority of respondents, it would seem, did not try very hard.

The comparison group was the alumni of the Ohio Conservation Laboratory assembled at their annual conference and reunion. Their mean score of 60.6 is three times the score of teachers in Missouri and Minnesota and five times the Ohio mean. (Table XXXVI).

Low scores were, however, not unexpected. We find we can still make comparisons between scores for state and national publications as groups and also for most of the 22 publications. We do find that scores drop off toward the end of the test (See Figure 12). The first four pieces in the test are national; the next eight are state-level publications, a different assembly for each state except that the first piece was distributed by the state's Department of Public Instruction. There then follow ten more national-level pieces. We dare assume that the mean level of attention accorded the first four pieces will be balanced by the slightly lessened attention given the next four national pieces--they follow after eight state-level pieces in the test--so that comparisons may be made between the eight state-level pieces as a group and the first eight national pieces as a group without having to apply an index for lagging attention.

State publications are better known than are national ones

In two of the three states the mean awareness score per publication (T-A total for group/N x pieces in group) was higher for state publications than for national ones. These are the first two rows of figures in Table XXXVII. Mean scores for the state publications are

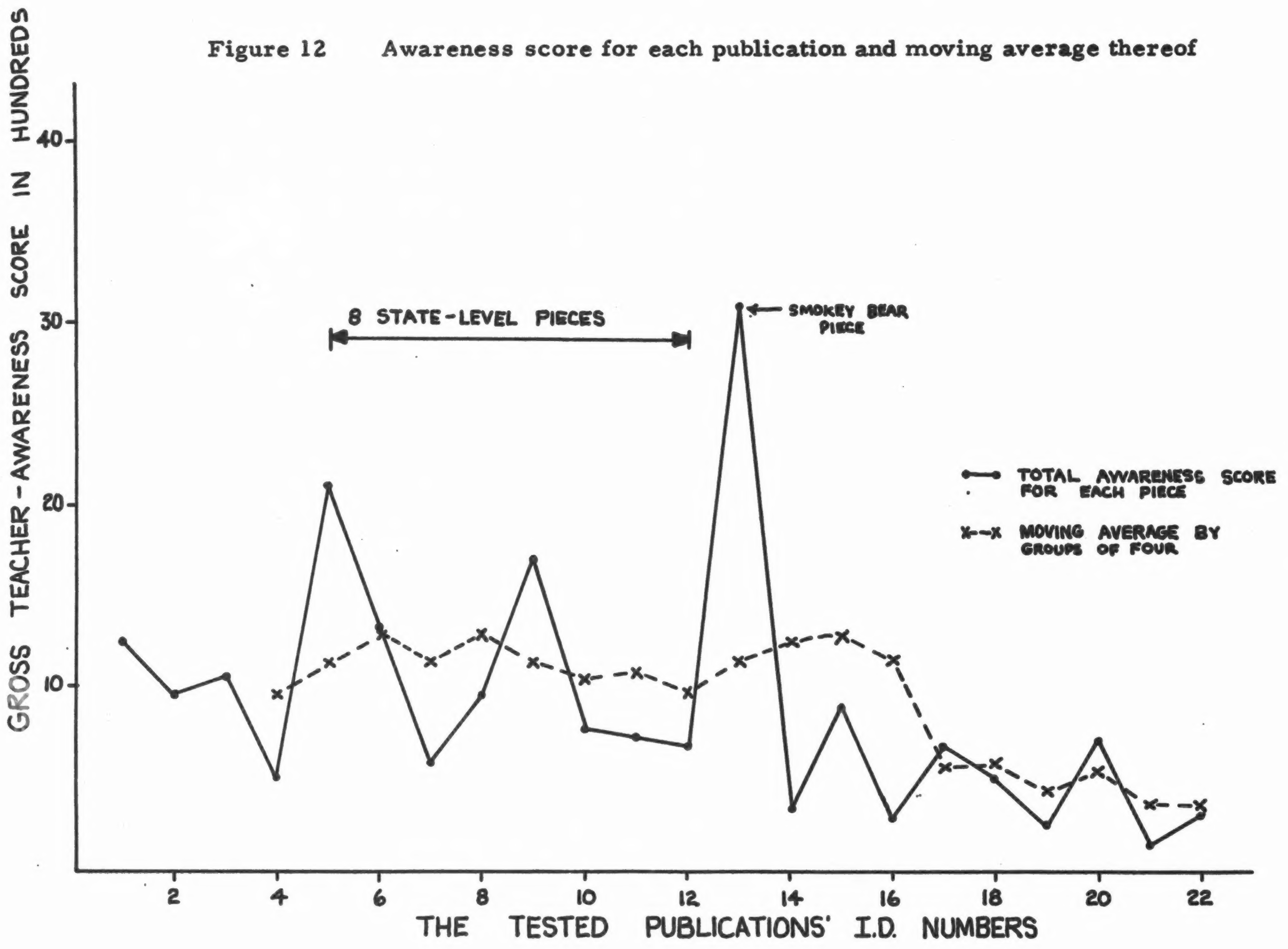
Table XXXV Seriation of teacher-awareness scores for 1, 184 teachers in three states and one group of conservation-workshop alumni

	Frequencies by group			
Score	Minnesota	Missouri	Ohio	Cons. -workshop
170-179			1	
160				
150				
140				1
130				
120	2	1	2	1
110		2		2
100		2	1	2
90			2	2
80	4		3	1
70	4	3	3	4
60	5		9	6
50	12	7	13	2
40	12	8	12	3
30	27	14	30	3
20	61	36	44	3
10	67	44	102	5
0-9	138	78	435	1
5-9	54	29	130	
1-4	33	20	115	1
0	51	29	190	
Totals	332	195	657	36

Table XXXVI Teacher-awareness means in three states and comparison of elementary with secondary teachers

	Minnesota	Missouri	Ohio	Cons-Lab
Number of respondents				
Elementary	223	155	501	28
Secondary	109	40	156	8
Total	332	195	657	36
Awareness scores/means per teacher				
Elementary	17.00	19.90	10.61	60.61
Secondary	19.97	15.57	13.58	60.62
All	17.98	18.98	11.31	60.61
Mean score for those scoring more than zero				
Elementary	19.95	22.38	14.93	above
Secondary	23.92	22.68	19.08	
All	21.24	22.30	15.92	

Figure 12 Awareness score for each publication and moving average thereof



twice those for national ones in Missouri, 1.4 vs. 1.7. In Minnesota state publications were slightly ahead, 1.2 vs. 1.1. In Ohio, on the other hand, the mean for national is almost identical to that for Missouri, 0.75 vs. 0.74 respectively, but the mean for state publications is notably lower, 0.45.

Mean scores for all 14 national pieces are very nearly the same for all states. There is only a slight difference in favor of Minnesota teachers, Minnesota 0.60, Missouri 0.54, and Ohio 0.55. There is no significant difference in the mean scores for the last five national publications either. In all instances, however, there are significant differences between individual pieces in the groups (See Figure 12).

One inference is tentatively supported: Teachers are more apt to notice publications dealing with their own state than with the nation. This is not surprising; education has long maintained that our interest tends to increase the more closely things related to ourselves. The national-level producers can infer from this that they will either have to make their publications better than do the states or put them out with state covers as American Forest Products Industries has done with __________ Forest Facts for several states and as the Department of the Interior has been doing with its series of publications on the Natural Resources of __________ (State).

Intermediate teachers score higher

Unexpectedly, secondary teachers got slightly higher mean awareness scores per teacher than did elementary (See Table XXXVI). But this was not consistently so. For the Conservation Laboratory comparison group there was no difference between mean scores for elementary and secondary. For Missouri the elementary was ahead of the secondary, 19.9 to 15.6 respectively while for Minnesota and Ohio secondary was ahead of elementary, 20.0 to 17.0 and 13.6 to 10.6 respectively. However, when one separates the elementary teachers into primary and intermediate, a different picture develops; primary teachers are much less aware of these materials than are teachers of intermediate grades and intermediates are also significantly ahead of the secondary.

When one then remembers that only 18 percent of all the materials prepared for students has readability levels below seventh, one may conclude that producers are shooting above the most appreciative target for free materials, the teachers and students of the intermediate grades.

Table XXXVII Comparison of mean awareness scores for state and national publications

Score segment	Minnesota	Missouri	Ohio
The 8 state-level pieces	1.20	1.44	0.45
First 8 national pieces	1.13	0.74	0.75
All 14 national pieces	0.60	0.54	0.55
Last 5 national pieces	0.27	0.22	0.25
All 22 pieces	0.82	0.86	0.51

A few pieces were recognized by one-fourth or more

Scores, when compared against the 12 points possible for each piece, were low. But a teacher could be aware of the publication tested without knowing it well enough or knowing enough locations of copies to make the "perfect score." A score of five points, possible by several combinations of answers all indicating some awareness of the publication, seemed adequate to infer that the teacher is aware of the publication. We tallied through the 1,184 x 22 scores to find all scores of five points or over. Each score ≥ 5 we tallied as one teacher aware of that publication.

No piece was known, as thus measured, by more than one-fourth of Ohio's teachers. The True Story of Smokey the Bear was familiar to 22.4 percent of all Ohio teachers tested and to 31.5 percent of those who had a total T-A score of more than zero. (See Table XXXVIII). Two pieces made this level in Missouri; 29.2 percent knew Smokey.... and 35.4 percent were familiar with the state's Guide for Elementary Education. Three pieces made the quarter mark in Minnesota, the state's conservation magazine, The Conservation Volunteer, Smokey...., and the Curriculum Guide for Science and Conservation, Grades 1-8, 37.4, 36.4, and 31.9 percent, respectively.

Table XXXVIII Percent of each states teacher's scoring five or more percent on each of the 22 publications

Publication	ID No.	Minnesota	Missouri	Ohio
National				
Conquest of the Land	1	7.8	10.3	12.3
Forest Adventures of Mark Edwards	2	11.1	6.2	7.3
Help Keep Our Land Beautiful	3	6.9	8.7	8.5
Class Report - Coal	4	4.8	3.1	5.0
True Story of Smokey The Bear	5	36.4	29.2	22.4
The Migration of Birds	14	0.9	3.1	3.2
An Outline for Teaching Conservation	15	7.2	4.1	7.2
The Three R's Resources	16	1.8	3.1	2.0
The Story of Water Supply	17	4.5	6.2	5.0
It's A Tree Country	18	4.5	4.1	3.5
Conservation, Discussion Portfolio	19	2.1	3.6	1.7
Teaching Soil and Water Conservation	20	3.3	3.1	5.8
Conservation Suggestions for Science Fairs	21	0.3	2.0	1.1
Ranger Rithmetic	22	3.3	1.5	1.4
State				
(See Appendix G-3, p. G-8, for titles of the eight pieces for each state)	6	31.9	35.4	4.4
	7	6.9	13.3	11.4
	8	3.9	7.2	4.7
	9	8.4	20.5	2.6
	10	37.4	9.2	7.2
	11	8.7	13.8	3.0
	12	6.3	19.0	2.6
	13	2.4	7.7	3.6

Eleven pieces were known to ten percent of teachers

Eleven publications were known to ten percent or more of the teachers tested. Only three of these were national: *Smokey. . . .* in all three states, *Conquest of the Land Through 7, 000 Years* in two states, and *Forest Adventures of Mark Edwards* in Minnesota. (See Table XXXVIII). The other eight pieces known to ten or more percent are state-level pieces. Note, therefore, that it is not at all possible to say that 11/22 or even 11/38 of the pieces were known to ten percent or more of all the teachers tested. We cannot even say that 3/14 of the national pieces tested were known to at least one-tenth of the teachers tested because the pieces do not make that grade in all states. *The True Story of Smokey the Bear* is the only national-level publication that consistently topped the ten-percent mark.

Only one Ohio publication made that mark, *Nature Lore,* 11. 4 percent. Two Minnesota pieces were known to ten percent or more, the same two named for scoring over 25 percent. Two others come close, Extension's *Our Soil to Use,* and *Water Resources of Minnesota, a Study Guide,* 8. 4 and 8. 7 percent respectively. Only one Ohio piece can be said to have come close, *What Water Means to Ohio,* 7. 2 percent.

Missouri's pieces were best known; five of the eight publications were known to at least ten percent of the teachers and the remaining three may be said to have come close. The high scorer was the previously mentioned curriculum guide of which the Missouri Department of Education has produced 300, 000 copies, a multiple of the number of teachers in Missouri schools. All the other pieces are productions of the Missouri Conservation Commission done in consultation with the Department of Education and with the services of reading specialists as well. They are a graded series, they constitute the state's "official" free publications on conservation for schools, they are produced in the hundreds of thousands, and they are revised and reprinted.

The Smokey Bear Story

One-half of the elementary teachers tested were familiar with *The True Story of Smokey the Bear* but only nine percent chose the correct answer for its content. There were other publications scoring the same for correct answer on content but much lower for awareness score. What may the difference mean? Smokey has become an image identified with forest-fire prevention. Teachers apparently assumed that this particular piece is another one on forest fires, they assumed a familiarity without having inspected content. In fact, that very assumption may be preventing their really looking at content at all! They also often "knew" they possessed a copy the while they apparently did not know that this one was what the title indicated, the "true story of Smokey...."

Significantly, of the many "comic book" pieces in the collection, Smokey was the only one that was rated among the upper quarter in appearance. It happened to be the only comic book in the collection having a cover of glossy paper and with full color.

Conclusions

Correlation between teacher-awareness and number of copies printed is not high; the pattern is not consistent. The data do show that low numbers and low awareness are coupled but after the quantity becomes great enough to cover the audience segment intended it would seem to take a very large increase in quantity to markedly increase awareness.

Bearing in mind the findings that appearance and format very markedly affect appearance judgments and, further, that appearance judgment does have a high correlation with teachers' use of materials it is reasonable that appearance may have more effect than quantity does. We hypothesize that expenditures on improving appearance and quality will yield a greater awareness return than will that same money invested in producing more copies. The teacher-awareness test results support this hypothesis.

The Missouri results reveal another factor. The recognition of an acceptable source and the establishment of an effective publicizing and distribution system is essential to the development of widespread acceptance and use of "sponsored" materials.

A series of sayings from the business world seems an appropriate summary of our teacher-awareness findings: a product must be attractively packaged to get people to buy; it must be of good quality to get them to buy again; it must be readily available to keep people buying.

CHAPTER XIII - SUMMARY AND CONCLUSIONS

The project attempted to discover what kinds of free and inexpensive printed materials on conservation may be needed, to determine kinds that are being produced, the quantity produced, and the aggregate expenditure for that production. It aimed to assay characteristics of extant materials, to determine teacher awareness of conservation materials, and, by a study of the relationships between characteristics of the materials and those of distribution systems, to recommend to producers of materials some ways of increasing the efficiency of their efforts. In short, the objective was the conservation of conservation materials.

We solicited free and inexpensive printed materials on conservation prepared for or given to schools from all discoverable producers at both state and national levels. We contacted 2400 offices; 73 percent responded; 773 sent us materials. We visited 100 offices in 12 states and in Washington, D. C., and from the offices visited collected nearly three-and-one-half times as much material as we had been mailed by those same offices. We received over 8,000 different pieces of material in one year of collecting.

Some information was developed on the whole collection, less publication lists, 7,524 titles. Most assays were made of a randomly selected sample. We used one-third of all materials addressed to teachers and to students, one-sixth of the materials addressed to the general public and to managers. The total sample amounted to 1,541 pieces, roughly one-fifth of the total collection less publications lists.

Material was sorted and tallied according to audience addressed (teachers, students, general public, managers) and resource treated (soil, water, minerals, plants, animals, recreation, general, and miscellaneous). Format characteristics such as type of publication, pages, illustration, and use of color were recorded for each piece. Date of publication, producer, and source from which received were always recorded.

Readability levels were measured using the Dale-Chall formula. Information on publication history, costs of printing, and total copies produced were obtained from producers of the sample pieces. The content of all materials for students and of the sample titles for teachers and public was analyzed by reading the material and developing a list of topics treated.

Three sets of judges, three in each set, evaluated appearance, quality, and certain other characteristics of each of the 1,541 titles in the sample. The judges were conservationists, educators, and classroom teachers. Weighted values of judgments for each of the 29 judges were developed and mean values for each set, for each title, and for each group of titles were calculated. Correlations and regressions were developed between the several sets of judgments. The system also caused teacher judges to indicate what level of use they would make of each piece; from this it was possible to analyze the characteristics of materials that good teachers, looking at a great many pieces, would use.

Finally, a test of teacher awareness of materials was made in three states, Minnesota, Missouri, and Ohio, each state representative of divergent publication and distribution practices. Fourteen pieces of national-level material and eight state-level titles for each of the tested states were the subject of the test administered to a stratified random sample of about three percent of the teachers in each state. We got a 33 percent return yielding data from one percent of the surveyed universe.

The recording and processing of the data collected resulted in 14 data decks and 27,000 data cards. Most of the data has been subjected to analysis, although often not as rigorously as desired. The following are some of the findings and conclusions about free and inexpensive printed materials on or related to conservation:

1. There are at least 20,000 titles of free and inexpensive printed material related to natural resources on the active list; this is exclusive of the unknown numbers of titles produced by local sources, i. e. below state levels.

2. Most of the material produced is technical, that is, it is addressed to managers, technicians, scientists, and the like. Far more than one-half of all materials produced by conservation-related federal agencies is technical; in the case of some agencies over 90 percent is highly technical.

3. Most of the material in our collection is for the general public or for large segments of it such as housewives, hunters, fishermen, gardeners, etc. Most of the material given to schools is for the general public; the next largest fraction of materials given to schools is technical. Less than one-tenth of all free and inexpensive material on conservation is prepared for use in schools.

4. Materials sent in response to mail requests included a large proportion of general public materials. Visitation to producers will increase technical materials more than it will those for schools or for the public.

5. The collection of 7,500 pieces other than publications lists is distributed among the four audiences thus: public 57 percent, managers 24 percent, students 11 percent, and teachers 9 percent. We hypothesize, however, that were one to get a true sample of all conservation-related materials, the percentage distribution would be 65 technical, 25 public, 6 students, and 4 teachers.

6. We have materials from 685 producers and publications lists from 88 others. We estimate there are over 1,000 producers of printed materials on or related to conservation.

7. State-level agencies make up 3/8 of the producers represented in the collection. They collectively account for 50.0 percent of the titles in the collection. Thirty-four federal agencies contributed 25.8 percent of the collection. Government agencies, state and federal, constituted 42.5 percent of the list of producers and accounted for 75.8 percent of all material in the collection. More than three-fourths of all conservation material is produced by governmental agencies; when all technical materials are included, somewhere around 90 percent are conservation materials produced by governmental agencies.

8. State-level offices, including organizations as well as governmental agencies, account for 57.2 percent of the titles in the collection. There is, however, much duplication and overlap, e.g. species descriptions.

9. Over one-half of materials for students (53.3 percent) came from state agencies, not counting state Departments of Public Instruction which added only 2.0 percent of student materials. Federal agencies accounted for 20.2 percent of materials addressed to students.

10. State agencies also lead in titles for teachers, 29.0 percent, followed by Departments of Public Instruction with

21.3 percent of teacher materials. Industries and industrial associations yielded 11 percent of total materials and a significant portion of materials for schools.

11. Most producers put out very few titles; 231 producers represented in the collection sent but one piece and 102 more sent only two pieces. Nevertheless, some of the most highly-rated titles in the collection came from producers that sent very few pieces. It is probable that some were more selective in what they sent than were others but, as a group, the producers represented by very few pieces do not appear to be significantly different from the producers of many titles in so far as qualities of materials are concerned.

12. National organizations lead all other groups of producers in the number of copies produced per title followed closely by industrial associations, 900,000 and 800,000 respectively. The former group has its mean copies per title significantly elevated by a series of comic-book formats produced by one organization, the Soil Conservation Society of America.

13. State-level producers average 47,500 copies per title; national-level producers average 320,000, but federal agencies averaged only 163,000 copies per title for the materials in the collection.

14. Most producers publish relatively small numbers of copies per publication. The same is true of all titles produced irrespective of producer group. The median number of copies per title is only 15,000; one-half of all titles have had total press runs of less than 15,000 copies.

15. The median number of copies per title is 15,000; the mean is 172,000. Only one percent of all titles have run over five million copies, three percent have run one million or more. On the other extreme, one-fourth of all titles in the collection have run less than 5,000 copies.

16. Mean copies per title for student materials is markedly higher than that for the other audience groups, 415,700.

Mean for the general public is about the same as the overall; mean for teacher materials is 78, 800 and median is 12, 500. The mean for technical materials is 38, 300. It requires, however, four million copies to cover all students in one specific grade in the whole country and over two million to cover all teachers. Quantities produced are seldom adequate for even a 1:1 coverage of the intended audiences.

17. One frankly admitted reason for the production of free materials is the selling or advertising of the producer. Relatively seldom, however, have producers employed professionals in the fields of advertising-selling-public relations to make the materials more effective for this purpose. Industries and industrial associations are a notable exception; it is apparent in our collection of materials that they commonly so employ the services of such specialists.

18. Most of the teacher and manager materials are booklets, those for teachers being more attractive and having a higher average number of pages. Most abundant of the materials for students are single sheets or sets of sheets. The most frequent type of material for the general public are leaflets and folders.

19. If one randomly selects a piece out of the 8, 000 in the collection, the probabilities are 4:1 that it will not have a cover, 3:2 that it will have line drawings and probably photos as well, and 3:1 that it will be a one-color job, usually black on white. The odds are 1:1 that it will have cost no more than four cents.

20. Most of the free material is cheaply printed. The median printing cost is 4¢ per copy. Teacher material has the highest printing costs, median 15. 5¢, mean 33. 9¢. Material for the general public is cheapest, median 3. 0¢ and mean 7. 7¢. Median cost for technical materials is the same but the mean is higher, 13. 6¢. For student materials the median cost is 4. 5¢, mean 9. 2¢. The mean printing costs for all materials in the collection is 12. 7¢ per copy.

21. Three-fifths of all the free and inexpensive material in the collection cost less than six cents per copy to

print. The mean cost is elevated by teacher materials produced as an essential service to teachers by Departments of Public Instruction and by source materials and teaching aids produced by all producer groups. Governmental agencies produce most of the lower-cost materials. About one percent of the collection cost $1. 00 or more per copy; the elimination of these from calculations for mean cost reduces it by 2. 3¢, from 12. 7 to 10. 4.

22. The aggregate annual expenditure for printing free and inexpensive materials on conservation is somewhere around $100, 000, 000. Mean cost times mean quantity times medium estimate of titles per year yields an estimate of $130, 000, 000. Using adjusted means, means after removal of the extremes, yields an estimate of $67, 000, 000. The estimate adjusted for the probable distribution of all materials, that is, more technical materials than in the collection, is $57, 000, 000. Since all of these figures are for printing costs only, the aggregate annual expenditure for the production of free and inexpensive materials related to natural resources is well over $100, 000, 000.

23. Thirty percent of the material is undated. Undated material is least often produced by federal agencies and seldom produced by state Extension Services. State agencies yielded 58 percent of all undated titles in the collection, the while they yielded 50. 0 percent of all titles. Industries yielded ten percent of undated titles as against six percent of all titles; industrial associations, on the other hand, date the same proportion of their materials as do all producers. National-level educational organizations, surprisingly, yielded 2. 1 percent of undated titles as compared with 0. 4 percent of all titles, apparently, as a group, being believers in the efficacy of not dating materials.

24. The time distribution of dates of publication for undated materials is not markedly different from that for dated pieces except that the exhaustion rate for undated is initially higher. It is also noted that a small fraction of undated material remains on the active list for a long time, longer than ten years and in some instances more than 20.

25. Free and inexpensive materials are ephemeral; their "half life" is only slightly more than two years. One-half of all titles produced in a given year, or still on the active list in any given year will be exhausted two-plus years later. Free materials tend to be exhausted before they are outdated.

26. The majority of free and inexpensive materials related to conservation overshoot the readability levels of the intended audiences. Median readability level for student materials, as measured by the Dale-Chall system, is 9th and the mean is grade-level 10.7. Only 18 percent of the materials prepared for students has readability level below 7th; less than four percent have readability below 5th. The Missouri Conservation Commission is the only state agency having more than one piece with readability below 5th. At the other extreme, of the 50 pieces (six percent) of student materials having readability levels of 15th and over, 42 percent were produced by federal agencies and 38 percent by state agencies.

27. Materials for the general public have mean readability level of 11.84; less than five percent fell below 7th. Newsweek was the only one among national magazines sampled that had 11th readability level. Reader's Digest articles ranged from 6th to 9th, Conservation materials for the general public are overshooting on readability.

28. Technical materials are technical; the median readability level for them was 14th, the mode was "16th and above," and the mean was 13.29. A problem for schools posed here is that teachers desire more "technical" materials, material with more information in it, but the readability level and the low attractiveness of extant technical materials limit their usefulness to schools.

29. Conservation-related words are not the cause of the readability problem to any greater extent than is general vocabularly level.

30. Animal and plant resources get the major share of attention, they having 18.8 and 18.1 percent of all titles, respectively. Recreation gets almost as much attention, 16.1 percent of all titles, and much of this

material deals with recreational uses of animal and plant resources. One can, therefore, say that the biotic resources command one-half of all attention in that half of all free and inexpensive conservation materials deal with them, mainly wildlife and forests.

31. Soil, water, and minerals, the basic resources, share 23.7 percent of attention as measured by titles devoted thereto, 6.7, 9.6, and 7.4 percent respectively. In the case of minerals, 64.2 percent of the material is technical so it may be said that minerals are the most neglected resources in the conservation literature but soil is not much better off.

32. There has been relatively little shift in the distribution of free materials among the resources over the last 15 years. The most pronounced shift is to more materials on recreation and the reduction of the proportion devoted to forests.

33. Newer conservation problems or developments such as air pollution, radioactive wastes, the pesticides questions, newer sources of energy, and population growth get little attention in free and inexpensive materials on conservation. Air pollution, for instance, is a topic in less than one-half of one percent of the material. The other topics mentioned get less attention. There is a considerable lag between recognition of a problem as evidenced by its appearance in indexed peiodical literature and the production of free and inexpensive materials devoted to it.

34. Erosion is still, in the 1960's, the most prevalent topic in materials dealing with soil; it is a topic, and often the only one, in more than one-half of the materials for students. Land judging is next in prevalence followed by soil formation and soil characteristics, i.e., describing soil.

35. The water cycle is so commonly a topic in material on water that the odds are 2:3 it will be a topic in student and teacher materials while only 1:19 that it will be in materials for the general public. There it is pollution

that gets major attention. Pollution is a topic of only 12 percent of the materials on water for teachers but is the major topic in materials for students, occurring in 42 percent of the titles.

36. Fossil fuels, petroleum mainly, get the major attention among mineral resources; they are the topic of 40 percent of student materials on minerals, 27 percent of teacher materials and 33 percent of public materials. Geologic processes, geologic maps, and the identification of rocks and minerals together are topics of 70 percent of student materials. There is little on the conservation or management of mineral resources.

37. Tree identification is the topic of 47 percent of materials for students dealing with plant resources. Plant-related materials in the collection are almost exclusively on trees and forests. Agricultural plants are discussed in only one percent of student materials on plants the while they are a topic of one-eighth of public materials.

38. Forest fire is a topic of one-fifth of all teacher and student materials related to plants but of only three percent of public materials thereon. The majority of chart-sized material supplied as teaching aids on forestry are fire-prevention posters.

39. Wildlife is the principal topic of the material related to animal resources. Wildlife would seem to be limited to vertebrates, judging from the content of the materials collected. Few out of the vast quantity of entomological materials known to exist were sent to us. Only five percent of the student materials on animals treat domestic animals. Again specie description is the principal topic of the material.

40. Even the general materials, those dealing with two or more of the resources, discuss forests and wildlife more than other resources. Soil and water are next; minerals are seldom discussed.

41. Human resources are apparently not considered a topic for conservation as judged by the content of the

materials in the collection. However, about two percent of the total materials do deal with health and safety.

42. Management is seldom a topic in student and teacher materials, unless one believes that the "conservation pledge" does so. Future needs are not often discussed. The free materials on conservation concentrate on identifying and describing resources, i. e. plants, animals, rocks and minerals, and soils.

43. The emphasis within the free and inexpensive materials related to conservation is on saving and protecting rather than prudent development and use. Conservationists as a group have been and still are accused of being negativists, "don'ters." Conservation-related materials addressed to teachers, students, and the general public support rather than refute this charge.

44. Most materials for the general public, or for large segments of it, deal with but one resource and usually one topic about that resource. Materials for teachers are markedly broader in scope though limited in depth. Depth is meager in all except the technical materials.

45. Producers of conservation materials are, with rare exception, assuming that conservation is related to science rather than to social studies. There is very little material prepared for or directed to the social sciences. An examination of topics in textbook materials for schools reveals that conservation is more often mentioned in social studies than in the natural sciences. It would seem that the producers of conservation materials have at least thrice missed the target; they have overshot on readability, undershot on depth; and have provided most for the least receptive of the three sets of teachers, the secondary science teachers.

46. The quality-rating system developed by the project rated technical materials highest and materials for students lowest, 5. 02 and 4. 63 being the respective quality means on a zero to eight range. On the other

hand, student materials received the highest appearance rating, 5.11, while technical materials were lowest, 4.86.

47. Among subject groups, material on minerals were rated highest for quality among teacher and student materials, material on water highest among public materials, and material on plants highest among materials for managers.

48. Eighty percent of the materials rated most highly for quality have covers. Glossy paper, good photo reproduction, and color are common. Line drawings are found in most pieces. Appearance of material is related to quality as evaluated by the three sets of judges. Whether it is causal of higher quality ratings or is correlated with the efforts and costs involved in the production of the material is not proven.

49. Conservationists are significantly better predictors of the concensus rating of quality (the mean of all quality judgments) than were the other sets of judges. At the five-percent level, coefficients of correlation between conservationists' judgment of quality and the grand mean (concensus) are a consistant 0.88. The coefficient of regression is coincidentally also 0.88 with a standard estimate of error within one-half standard deviation for all the materials. However, it was discovered that quality, as judged, was not the best index to teacher use of materials.

50. Conservationists almost invariably tended to rate quality low for materials directed to the lower grades. They are biased against things written in concept and vocabularly levels appropriate to younger children. About the only exception to this generalization was the case of the now out-of-print Eschmeyer series on wildlife, Bobby Bluegill, Tommy Trout, etc. Even these did not get a high quality rating by conservationists. This indicates a limitation or a flaw in the use of the opinions of conservationists in judging materials being prepared for elementary grades.

51. When one examines ratings for the materials which two-thirds or all of the teacher judges indicated they would use (102 out of the 1, 541 titles), it is apparent that they do tend to select pieces rating high in quality more often than pieces rated low. However, it is also apparent that there is a higher correlation with appearance ratings than with quality ratings. Appearance outweighs quality of the content in determing whether or not teachers will use free and inexpensive printed materials on conservation.

52. Teacher awareness of materials, as measured by the test developed, is generally low. A comparison group, alumni of the Ohio Conservation Laboratory, a summer workshop for teachers, averaged a score of 60 out of a "perfect" 242; 1, 184 teachers tested in three states averaged around 20. Nevertheless, low scores not withstanding, the teacher-awareness test tells the relative awareness of different groups of teachers and for different kinds of materials.

53. State-level publications are generally better known to teachers than are national-level ones. Publications that have been in circulation for several years are better known than the more recent ones. Materials for student use are more apt to be known by teachers than are materials for teachers.

54. Secondary teachers as a group exceed elementary teachers as a group when teacher-awareness scores for all three states tested are considered. In Missouri, however, elementary teachers had higher scores than did the secondary teachers, mean scores of 19. 9 and 15. 6, respectively. Primary teachers are least aware of the materials tested. Teachers of the intermediate grades, 4-6, are most aware of the materials, their score is ahead of that for secondary teachers.

55. Two of the 14 national-level pieces tested were known to at least ten percent of the teachers in Missouri and Ohio. One of these, The True Story of Smokey the Bear, was known to at least 20 percent of the teachers in all three states.

56. Only one state-level piece was known to at least ten percent of Ohio teachers and another did come close.

Two Minnesota pieces made that level and two others came close. Five of the eight state-level pieces were known to at least ten percent of Missouri teachers and the other three came close. The range between high and low means for state-level publications was smaller in Missouri than in the other two states; the mean for all pieces was also higher.

57. One-half of all elementary teachers were familiar with The True Story of Smokey the Bear but only nine percent chose the "correct" answer for its content. Smokey has become an image identified with forest-fire prevention and teachers apparently assumed that this particular publication was another one on forest-fire prevention. This does not settle the argument over the efficacy of Smokey; it perhaps adds more fuel to the flame!

58. Correlation between teacher-awareness as tested and the number of copies printed of each publication is not high. The pattern is not consistent. The data do indicate that low numbers and low awareness are coupled but, after the quantity becomes great enough to cover the audience segment intended it would seem to take a very large increase in quantities published to markedly increase teacher awareness.

59. It is hypothesized that expenditure on improving appearance and quality will yield an increased awareness return greater than will the same expenditure invested in producing more copies. This, however, applies after quantity produced is not the limiting factor.

60. The recognition of an acceptable and reliable source and the establishment of an effective publicizing and distribution system appear to be essential to the development of widespread acceptance and use of free and inexpensive materials.

Several cliches pass uncomfortably in review as these summary and conclusions were drafted. Among them is the one about losing sight of the forest for looking at the trees, or is it vice versa? As an instructor I am also reminded that while most students do get C's, theoretically, not all students are C students. So it is with these thousands of titles of free and inexpensive materials on conservation. Some do not even deal with conservation at all. Some do so exceptionally well. We set our goals on looking at the whole picture, at the sum total. Collectively that view is distressing. But there are good materials. They are not, however, randomly distributed and there are causal factors. We have deliberately avoided naming bad materials and have also not named many "good" ones; we do hope that glimpses of the big picture we have tried to develop will help the producers of conservation materials develop more effective materials, or even, perhaps, divert the effort to more effective means for promoting conservation education. It is, after all, hard to compete with the pros, the commercial producers of educational materials. Not doing so, or cooperation instead of competition, may be conservation-materials conservation.

REFERENCES

Boyd, Harper W. Jr. and Ralph Westfall (1964). Marketing Research: Text and Cases. Homewood, Illinois: Richard D. Irwin, Inc.

Conservation Directory (1965). Washington, D. C.: National Wildlife Federation.

_____________ (1964), (1963), and (1962)

Conservation Yearbook (1962). Erle Kauffman, ed. 3110 Elm Avenue, Baltimore, Md.: The Conservation Yearbook. (Sixth edition).

Dale, Edgar and Jeanne S. Chall (1948). "A formula for predicting readability." Ed Res Bul. XXVII:11-20, 28, 37-54.

Education Directory (1964-65), Part I, Federal Government and States. Washington, D. C.: U. S. Office of Education.

_____________ (1963-64)

_____________ (1964-65 Part 4, Education Associations

_____________ (1963-64

Farm and Industrial Equipment Institute (1964). Membership Roster. 410 North Chicago Ave., Chicago, Illinois: The Institute.

The Fortune Directory, The 500 Largest U. S. Industrial Corporations .... (1964). Fortune. August 1964.

_____________ (1963)

Hone, Elizabeth B. (1959). "An analysis of conservation education in curricula for grades kindergarten through twelve." Unpublished doctoral dissertation, University of Southern California.

Kramer, Carlisle H. (1953). "Committee evaluation of free printed instructional materials." Unpublished doctoral dissertation, Stanford University. 243 pp. U. Michigan Microfilm No. 5, 769

Lusk, Robert C. (1956). "Principles and practices for the development of sponsored educational materials as exemplified by the educational program of the Automobile Manufacturers' Association." Unpublished EdD dissertation, Wayne University. 136pp. U. Michigan Microfilm No. 17,162.

Minerals Yearbook (1964) Vol I, Metals and Minerals. Washington, D.C.: U. S. Bureau of Mines.

____________ (1963) and (1962)

____________ (1964) Vol. II, Fuels.

____________ (1963)and (1962)

Payne, Stanley L. (1951). The Art of Asking Questions. Princeton, N.J.: Princeton University Press.

Pepe, Thomas J. (1962). Free and Inexpensive Educational Aids. New York: Dover Publications, 192pp.

Products File Issue, (1963) Implement and Tractor, Vol. 78, No. 8. March 31, 1963.

Roper, Keith I. (1956). "The utilization of industry-sponsored instructional materials by Colorado high school chemistry teachers." Unpublished doctoral dissertation, University of Colorado. 211pp. U. Mich. Microfilm No. 22, 633.

Siegel, Helen F. (1956). "A study of teachers' use of business-sponsored instructional materials in selected elementary schools." Unpublished EdD dissertation, Wayne University. 118pp. U. Michigan Microfilm No. 17,166.

Sprowles, Lee (1948). The Sloan Instructional Materials. Lexington, Ky.: University of Kentucky. 79pp.

Stone, Clarence R. (1956). "Measuring difficulty of primary reading materials: a constructive criticism of Spache's measure." Elem. Sch. Jour., LVIII:36-41.

Tribe, Edward B. (1957). "A readability formula based upon the Rinsland formula." Unpublished doctoral dissertation, University of Okla. U. Michigan Microfilm No. 20, 569.

U. S. Dept. of Agriculture (1963). List of Available Publications of the United States Department of Agriculture. List No. 11. Washington, D.C.: Government Printing Office. 109pp.

U. S. Fish and Wildlife Service (1963). "Survey and evaluation of the Fish and Wildlife Service publications program." (An internal distribution report of consultant Clayton F. Mathews.) Washington, D.C.: The USFWS. multilith. 30pp+.

U. S. Forest Service (1963). "Final report, Instructional Materials Evaluation, Project Number I & E 302-905-33." (Unpublished manuscript of report by Wm. Hammerman and committee on California project). 17pp+122pp appendices.

APPENDIX A

EXHIBIT OF LETTERS AND FORMS USED

		Page
A-1	First letter requesting materials and its enclosures	A-2
A-2	Second request letter	A-4
A-3	Letter and enclosures requesting information on costs and quantities of materials	A-6
A-4	Questionnaire on costs and quantities	A-10
A-5	Master data card	A-11
A-6	Letter and instructions for principals contacted in teacher-awareness test	A-12

Survey of Conservation—
Education Materials
pported through the
Cooperative Research Program
of the U.S. Office
of Education, USDHEW

SU Research Foundation
Project 1719

roject Director—
CARL S. JOHNSON, *Director*
Ohio Conservation Laboratory

ssociate Director—
CHARLES A. DAMBACH, *Director*
Natural Resources Institute

PROJECT
CONSERVATION-MATERIALS CONSERVATION
2090 Neil Avenue, The Ohio State University
Columbus, Ohio 43210

A-2

March 18, 1964

Secretary
Hickory Handle Association
1803 Trevilian Way
Louisville, Kentucky

Dear Sir:

Many individuals and organizations have shown interest in studies concerning the quantity, quality, effectiveness of their distribution or use in schools of conservation-education materials. To date no such studies are available.

Because of the concern shown by responsible organizations and agencies, the project "Conservation-Materials Conservation" co-sponsored by The Ohio State University's Natural Resources Institute and the U. S. Office of Education has become a reality.

It is the purpose of the project to gather printed material related to natural resources that have been written for the use in any grade level of schools.

We would appreciate your cooperation. Specifically, will you please 1) send us two copies of conservation-education or related materials that your office has produced or distributed within the past five years for the use in schools, and 2) fill out the enclosed postal card and place it in return mail.

Yours very truly,

Carl Johnson

Carl S. Johnson
Project Director

C-MC

C-MC KNOWS:

MUCH "free and inexpensive" printed material on conservation subjects is being produced in the U.S. by agencies and organizations such as yours.
MUCH of such material is printed for or distributed to our schools.

C-MC ESTIMATES:

There are 37,000,000 students in our schools.
There are 1,500,000 teachers in our schools.
|| **Potential Users of Materials**

C-MC SUGGESTS:

I. Some natural resources receive more emphasis than others.

II. Conservation materials are better understood when they are prepared for the student's specific age and reading levels.

C-MC ASKS:

1. What kinds of publication materials are most needed?
2. What kinds of materials are most desired by schools?
3. What distribution methods are most effective for delivery of materials to schools?
4. Is it possible to produce single publications that are adaptable to grades one through twelve?
5. What kinds of materials are desired by students?, teachers?, school libraries?

C-MC NEEDS: YOUR COOPERATION!

ANSWERING THESE QUESTIONS IS THE GOAL OF "Project Conservation-Materials Conservation" sponsored by the United States Office of Education through the Research Foundation of The Ohio State University.

Your contribution is essential for this study.

Please send two copies of each publication, which were distributed by your agency or organization during the years 1959 through 1963, to:

Project Conservation-Materials Conservation
2090 Neil Avenue
Columbus, Ohio 43210

A-4

A Survey of Conservation—
Education Materials
Supported through the
Cooperative Research Program
of the U.S. Office
of Education, USDHEW

OSU Research Foundation
Project 1719

Project Director—
CARL S. JOHNSON, *Director*
Ohio Conservation Laboratory

Associate Director—
CHARLES A. DAMBACH, *Director*
Natural Resources Institute

PROJECT
CONSERVATION-MATERIALS CONSERVATION
2090 Neil Avenue, The Ohio State University
Columbus, Ohio 43201

June 16, 1964

Mr. Francis Parkman, Jr., President
California Association of Independent Schools
P. O. Box 1211
Los Altos, California

Dear Mr. Parkman:

During the month of March C-M C contacted you concerning the production and distribution of conservation-education materials by your organization. To date, we have recêived 675 replies. Yours was not among them.

Many individuals and organizations have shown interest in studies concerning the quantity, quality, and effectiveness of their distribution or use in schools of conservation-education materials. Since there are no such studies available, C-M C, co-sponsored by The Ohio State University's Natural Resources Institute and the U. S. Office of Education, has been given the responsibility of conducting a thorough investigation.

C-M C's results depend on your cooperation. The first purpose of the project is to gather printed material related to natural resources that have been written for use in any grade level of schools.

We would appreciate your cooperation. Specifically, will you please:

1) send us two copies of conservation-education or related materials that your office has produced or distributed within the past five years for use in schools, and

2) fill out the enclosed post card and place it in the return mail.

Yours very truly,

Carl S. Johnson

Carl S. Johnson
Project Director

CSJ:ph

Enclosure

4¢
U.S. POSTAGE

THIS SIDE OF CARD IS FOR ADDRESS

Project CONSERVATION-MATERIALS CONSERVATION
2090 Neil Avenue (Room 55)
The Ohio State University
Columbus, Ohio 43201

0133

Do you have a list of publications? YES........ NO........
If YES, please send us a copy.

Does your office PRODUCE—YES........ NO........ and/or DISTRIBUTE—YES........ NO........ conservation-education materials for use in schools? If YES, please use the mailing label to send copies as described in the letter.

If answer is NO, please give name and address of the office which does so for you.

....

....

Would you like to receive releases and reports from this study? YES........ NO........

Name..**Office**..

Address..

....

Form 7310—Rev. 5/64

A Survey of Conservation—
Education Materials

Supported through the
Cooperative Research Program
of the U.S. Office
of Education, USDHEW

OSU Research Foundation
Project 1719

Project Director—
CARL S. JOHNSON, *Director*
Ohio Conservation Laboratory

Associate Director—
CHARLES A. DAMBACH, *Director*
Natural Resources Institute

A-6

PROJECT
CONSERVATION-MATERIALS CONSERVATION
2090 Neil Avenue, The Ohio State University
Columbus, Ohio 43201

May, 1966

TO: Producers of printed materials on conservation

SUBJECT: Request for Information

FROM: Project "Conservation-Materials Conservation"

In March we asked for a few minutes of your time for our study of free and inexpensive printed materials on conservation. We sent you a report of our project, a letter, a set of instructions and some forms for you to fill out about materials you sent us in 1964.

We know that you want to help us compile information on your materials. But since we also realize that you must have misplaced the original forms, we are sending you another set. We are also sending a copy of our original letter and instructions. Please mail the completed forms in the return envelope.

If you have not sent us the materials we requested in the first letter, a mailing label is enclosed for these.

We do need your help to complete the study. Thank you.

CSJ:pes

A Survey of Conservation—
Education Materials
Supported through the
Cooperative Research Program
of the U.S. Office
of Education, USDHEW

OSU Research Foundation
Project 1719

Project Director—
Carl S. Johnson, *Director*
Ohio Conservation Laboratory

Associate Director—
Charles A. Dambach, *Director*
Natural Resources Institute

PROJECT
CONSERVATION-MATERIALS CONSERVATION
2090 Neil Avenue, The Ohio State University
Columbus, Ohio 43201

March, 1966

TO: Producers of printed materials on conservation

SUBJECT: Progress report and request for futher information

FROM: Project "Conservation-Materials Conservation"

You are part of the 73 percent of 2408 addressees who responded to our request for "free and inexpensive materials related to conservation. . ." We made these requests between March 1964 and April 1965. The enclosed report is prepared for you who responded; it lets you know some of the things we have learned about our 8,000 piece aggregation.

There are a lot of such materials. We received about 5,000 different pieces by mail from roughly 1,200 producers and/or distributors.

When we personally visited 100-plus offices we received 3,000 more pieces, which is 3.4 times what we had been mailed by those offices. This plus other indices discussed in the report yield a calculation that THERE ARE AT LEAST 20,000 TITLES ON THE DISTRIBUTION SHELVES AT ANY GIVEN TIME.

In two years, about one-half of a year's publications will have been exhausted; in two more years, half of the remainder will be gone. A supply of 20,000 titles having "half lives" of two years requires an annual production of over 6,000! We know of three federal agencies that account for over 2,500 so this calculation is probably conservative.

Another inference is that quantities published seldom are adequate to reach the intended readership. We do need more information on quantities published, hence this request for more data.

About one-third of our material is undated. We need know when undated materials were published in order to prove or disprove our hypotheses that (1) the duration of undated materials is not significantly different from that for dated ones, and (2) that the audience acceptance is of shorter duration for undated than for dated materials.

FROM YOU WE NOW NEED: (1) information dealing with date, quantity, cost, distribution, etc. of specific titles named on the enclosed forms, (2) two more copies of each of the items for which forms are enclosed, and (3) materials which you have published during the years 1964 and 1965.

INSTRUCTION SHEET

The 3x8 forms enclosed are partially filled out to indicate pieces of our "analysis sample". Statistically, this sample averages 2 forms per producer, but if you're among the few who yeilded more than 60 pieces, we may cost you an hour of "research".

PLEASE, KIND SIR, TELL US!

(Questions on the form are altered for periodicals.)

WHEN?	Date of original publication; Dates of revisions: These are for those few publications that have been run several times under the same title, the first question is also for all undated items. For periodicals it is the year of Vol. 1, No. 1.
HOW MANY?	Number of printings; Copies in most recent printings; and Total copies printed: If we have filled these blanks from the printers copy, please verify or correct. For periodicals tell copies for last issue or average for last volume.
HOW MUCH?	Cost per title OR Cost per copy. This is printing cost only and for this we can get statistically valid figures if we but know quantity. So give us either your per copy figure OR your per title figure OR no figure at all if you, like some others, don't know or don't want to tell.
FOR WHOM?	Who were the intended readers? Check (x) as many boxes as are applicable. If you happen to check students, indicate the school level in the next question, but check only one box there.
HOW SENT OUT?	How has distribution to schools been made? Check (x) all applicable boxes. Federal-level personnel will notice that the form is oriented for state level. Sorry, but they do constitute the majority of the over 1000 to whom this is sent. Feds would check "State Dept. of Education" if they have distributed through that office in any several states.

RETURN IN STAMPED ENVELOPE ENCLOSED. Address in any event is: Conservation Materials Project, Ohio State University
2090 Neil Avenue, Columbus, Ohio 43201

THEN, PLEASE, SIR:

Send us TWO MORE COPIES OF EACH OF THESE MATERIALS, the ones for which the forms have been filled out. We are wearing out the one or two we have! We will be needing clean copies for some illustrations and displays.

AND also send us ONE COPY OF EACH PIECE YOU PUBLISHED IN 1964 AND 1965. We started mailing requests early in 1964, so 1963 is the last "complete" year in our collection.

MAILING LABEL IS ENCLOSED FOR THESE PUBLICATIONS

THANK YOU SIR. YOU ARE A GENTLEMAN AND A SCHOLAR. Do excuse us, Madam, if on gender we have erred.

FORMAT ANALYSIS

The format codes of the publications are given on the forms. An analysis of the format code is given on this page as a guide for those of you who are having difficulty associating the titles of publications we have used on the forms with materials you have produced.

Format data is recorded by a seven digit code, thus: 1st digit, form or format; 2nd digit, kind of cover; 3rd digit to 5th digit, pages; 6th digit, illustration; and 7th digit, color.

FORMAT

(1) Books, 81 or more pages
(2) Booklets, 16-80 pages
(3) Periodicals
(4) Packets
(5) Charts, maps, posters
(6) Folders or folded sheets, no cover, and always recorded as 2 pages only
(7) Single sheets, whether flat or folded, counted as 1 or 2 pages depending on whether or not back of sheet is used
(8) Pamphlets, 5-15 pages
(9) Miscellaneous, i.e., anything other than foregoing

COVER

(1) Cloth or "hardback"
(2) Paper
(3) "Selfed", meaning cover is of same stock as body
(4) None

PAGES

001 upward, paginated pages for book or booklet, average total pages for periodicals, total pages for selfed publications, total pages less cover for covered booklets and pamphlets, number of pieces of material in case of packets

ILLUSTRATION

(1) None
(2) Photos
(3) Drawings
(4) Both drawings and photos

USE OF COLOR

(1) Black only
(2) One color other than black
(3) Two colors
(4) Three or more colors
(5) True color

TITLE ______________________________

PRODUCER __________ **PUB DATE** __________

SERIAL NUMBER ____________

FORMAT CODE ______________

Date of original publication ________
Number of printings ________
Dates of revision ________
Copies in most recent printing ________
Total copies since first printing ________

Cost per title, OR ________
Cost per copy (latest printing) ________

Who were the intended readers?

General Public ☐ Technicians ☐
Educators ☐ Managers ☐
Students ☐ Other ____ ☐

If for students, for what level?

Elementary ☐ Technical Training ☐
Secondary ☐ Other __________ ☐
College ☐ __________________

How has distribution to schools been made?

None intended ☐
Through State Dept. of Education ☐
Teacher requests ☐
Student requests ☐
By agency personnel ☐
Other (tell below) ☐

____

Return to:

Project Conservation-Materials Conservation
The Ohio State University
2090 Neil Avenue (Apt. 55)
Columbus, Ohio 43201

Questionnaire to be mailed to producers of materials, with us filling out first four lines.

1. Item No. ________
2. Producer ________
3. Sources ________
____
____
4. Date Pub.________

5. Quantity ________
6. Cost ________
7. Catg. # ________
8. Audience ________
9. Format ____________

READING LEVEL DATA:

	#1 P. ___	#2 P. ___	#3 P. ___
1. No. of Words	________	________	________
2. #Diff. Words	________	________	________
3. #Sentences	________	________	________
4. % Words not on list	________	________	________
5. Avg. Sent. Lth.	________	________	________
6. Raw Score	________	________	________
7. Reading Level	________	________	________
8. Mean Raw Score		________	
9. Mean Reading Level		________	

PROJECT
CONSERVATION-MATERIALS CONSERVATION
2090 Neil Avenue, The Ohio State University
Columbus, Ohio 43201

A Survey of Conservation—
Education Materials
Supported through the
Cooperative Research Program
of the U.S. Office
of Education, USDHEW

OSU Research Foundation
Project 1719

Project Director—
CARL S. JOHNSON, *Director*
Ohio Conservation Laboratory

Associate Director—
CHARLES A. DAMBACH, *Director*
Natural Resources Institute

May, 1966

We are studying the quantity and quality of free and inexpensive materials for conservation education. Your school has been chosen completely by chance, i.e. the Random Sample Method. It is one of 400 being contacted in three states.

The purposes of this survey are to determine how effective the present system of distribution and use of free and inexpensive publications on Natural Resources is and to determine how, if need be, it can become more efficient.

The enclosed booklet better describes the project and reveals some of our findings. Instructions for you are on a separate sheet.

As you probably know, projects of this sort are very limited both in time and money. Ours is no exception. We therefore hope you will do everything in your power to support us.

Thank you.

INSTRUCTIONS FOR PRINCIPALS

If you are principal of an elementary school, the questionnaire goes to all except kindergarten teachers.

If you are principal of a secondary school, give the questionnaire to science and social studies teachers.

i.e. science includes general science, biology, health, chemistry, physics, senior science, earth science, and also agriculture, horticulture and vocational agriculture, etc.

—social studies include geography, history, principles of democracy, citizenship, ecomonics, etc.

Ask that teachers return questionnaires to your office within one week. Trial runs indicate it takes about 15 minutes to complete it.

Do fill out the principal's questionnaire (the one with yellow cover) please. You have no difficult questions!

Return all questionnaires to us in the enclosed envelope.

Keep the report on materials which we enclosed. Your cooperation will make it possible for us to send you another report on how well schools have become aware of free and inexpensive materials.

Project Conservation-Materials Conservation
Ohio State University
2090 Neil Avenue
Columbus, Ohio 43201

APPENDIX B

LIST OF PRODUCERS OF MATERIALS IN THE PROJECT COLLECTION

			Page
A	258	State Agencies	B-2
B	72	State-level Organizations	B-6
C	34	Federal Agencies	B-8
D	85	National Organizations	B-9
G	32	State Departments of Education	B-10
I	2	State-level Educational Organizations	B-11
J	7	National Educational Organizations	B-11
K	52	Industrial and Trade Organizations	B-11
L	143	Industries	B-12
	685	Producers of Materials	

State Agencies (Governmental)

A0457	Alabama Cooperative Extension Service	Ala.
A0003	Alabama Department of Conservation	"
A0007	Water Improvement Commission State Dept. of Health	"
A0458	Alaska Extension Service	Alaska
A0011	Alaska Dept. of Fish and Game	"
A0018	Arizona Game and Fish Department	Ariz.
A0020	Arizona Land Department	"
A0460	Arkansas Extension Service	Ark.
A0024	Arkansas Game and Fish Commission	"
A0025	Arkansas Division of Geology	"
A0507	Arkansas Highway Department	"
A0026	Arkansas Publicity and Parks Commission	"
A0461	California Extension Service	Cal.
A0030	The California Resources Agency	"
A0031	East Bay Regional Park District	"
A0046	Colorado Board of Land Commissioners	Colo.
A0044	Colorado Forest Service	"
A0045	Colorado Game Fish and Parks Dept.	"
A0043	Colorado Cooperative Fishery Research Unit State Univ.	"
A0050	Colorado Cooperative Wildlife Research Unit State Univ.	"
A0521	Colorado State University	"
A0463	Connecticut Extension Service	Conn.
A0052	Connecticut State Board of Fisheries and Game	"
A0055	Connecticut State Shell Fish Commission	"
A0464	Delaware Extension Service	Del.
A0441	Delaware State Development Department	"
A0061	Delaware Forestry Department	"
A0062	Board of Geme and Fish Commission	"
A0063	Delaware Geological Survey	"
A0066	Delaware Water Pollution Commission	"
A0070	Florida Department of Agriculture	Fla.
A0465	Florida Extension Service	"
A0071	Central and Southern Florida Flood Control District	"
A0072	Florida State Board of Conservation	"
A0073	Florida Forest Service	"
A0074	Florida Game and Fresh Water Fish Commission	"
A0077	Institute of Marine Science University of Miami	"
A0078	Oceanographic Institute Florida State University	"
A0079	Florida Park Service	"
A0081	Florida Soil Conservation Board	"
A0083	Georgia Department of Agriculture	Ga.
A0466	Georgia Extension Service	"
A0530	Georgia Department of Labor	"
A0535	Georgia Highway Department	"
A0085	Georgia Department of Mines and Geology	"
A0086	Georgia Forestry Commission	"
A0087	Georgia Game and Fish Commission	"
A0088	Georgia Department of Public Health	"
A0089	Georgia Department of State Parks	"
A0090	Georgia Soil Conservation Committee	"
A0093	Hawaii Department of Agriculture	Hawaii

A0096	Hawaii Marine Laboratory	Hawaii
A0468	Idaho Extension Service	Idaho
A0099	Idaho Department of Fish and Game	"
A0100	Idaho Forestry Department	"
A0469	Illinois Extension Service	Ill.
A0109	Illinois Geological Survey	"
A0110	Illinois Natural History Survey	"
A0502	Indiana Extension Service	Ind.
A0116	Indiana Department of Conservation	"
A0117	Indiana Flood Control Water Resources Commission	"
A0442	Indiana Highway Commission	"
A0121	Indiana Soil Conservation Committee	"
A0470	Iowa Extension Service	Iowa
A0124	Iowa Conservation Commission	"
A0125	Iowa Department of Health	"
A0126	Iowa Geological Survey	"
A0128	Iowa Soil Conservation Committee	"
A0129	Iowa State University	"
A0471	Kansas Extension Service	Kan.
A0131	Kansas Biological Survey Museum of Natural History	"
A0132	Kansas Fish and Game Commission	"
A0133	Kansas Geological Survey	"
A0137	Kansas Soil Conservation Committee	"
A0139	Kansas Water Resources Board	"
A0503	Kentucky Extension Service	Ky.
A0141	Kentucky Department of Natural Resources	"
A0142	Kentucky Department of Fish and Wildlife Resources	"
A0143	Kentucky Geological Survey	"
A0145	Kentucky Department of Public Information	"
A0146	Kentucky Water Pollution Control Commission	"
A0147	Louisiana Department of Agriculture and Immigration	La.
A0472	Louisiana Extension Service	"
A0148	Louisiana State Department of Conservation	"
A0149	Louisiana Forestry Commission	"
A0152	Louisiana Soil Conservation Committee	"
A0154	Louisiana Wildlife and Fisheries Commission	"
A0153	Louisiana State Univ. School of Forestry and W. Mgt.	"
A0162	Maine Department of Sea and Shore Fisheries	Maine
A0166	Maine Cooperative Wildlife Research Unit Univ. of Me.	"
A0474	Maryland Extension Service	Md.
A0169	Maryland Dept. of Forests and Parks	"
A0170	Maryland Game and Fish Commission	"
A0172	Maryland Dept. of Health	"
A0173	Natural Resources Institute Univ. of Maryland	"
A0174	Maryland Board of Natural Resources	"
A0175	Maryland Soil Conservation Committee	"
A0176	Maryland Department of Chesapeake Bay Affairs	"
A0177	Maryland Department of Water Resources	"
A0475	Massachusetts Extension Service	Mass.
A0181	Metropolitan District Commission	"
A0184	Massachusetts Soil Conservation Committee	"
A0504	Michigan Extension Service	Mich.
A0189	Michigan Department of Conservation	"

A0193	Michigan Inter. Agency Council for Recreation	Mich.
A0196	School of Natural Resources The University of Mich.	"
A0197	Michigan Water Resources Commission	"
A0450	Minnesota Department of Administration	Minn.
A0444	Minnesota Department of Business Development	"
A0476	Minnesota Extension Service	"
A0199	Minnesota Department of Conservation	"
A0200	Minnesota Geological Survey	"
A0543	Minnesota Department of Highways	"
A0541	Minnesota Iron Range Resources and Rehab. Com.	"
A0201	Minnesota Soil Conservation Committee	"
A0548	Minnesota Vacation Center	"
A0203	Minnesota Water Pollution Control Commission	"
A0205	Mississippi Department of Agriculture and Commerce	Miss.
A0477	Mississippi Extension Service	"
A0206	Mississippi Forestry Commission	"
A0208	Mississippi Geological Survey	"
A0209	Gulf Coast Research Laboratory	"
A0445	Mississippi Highway Department	"
A0211	Mississippi State Park Commission	"
A0212	Mississippi Soil Conservation Committee	"
A0214	Missouri Department of Agriculture	Mo.
A0505	Missouri Extension Service	"
A0215	Missouri Conservation Commission	"
A0452	Missouri Div. of Commerce and Industrial Dev.	"
A0216	Missouri Div. of Geological Survey and Water Res.	"
A0219	Missouri State Park Board	"
A0453	Missouri Dept. of Public Health and Welfare	"
A0478	Montana Extension Service	Mont.
A0223	Montana Fish and Game Commission	"
A0224	Montana State Engineer	"
A0225	Montana Board of Education	"
A0230	Montana Soil Conservation Committee	"
A0479	Nebraska Extension Service	Neb.
A0236	Nebraska Game Forestation and Parks Commission	"
A0239	Nebraska Department of Water Resources	"
A0481	New Hampshire Extension Service	N.H.
A0254	New Hampshire Water Resources Board	"
A0482	New Jersey Extension Service	N.J.
A0255	New Jersey Department of Agriculture	"
A0259	New Jersey State Soil Conservation Committee	"
A0260	New Mexico Department of Agriculture	N.M.
A0483	New Mexico Extension Service	"
A0263	New Mexico Department of Game and Fish	"
A0268	New York Department of Agriculture and Markets	N.Y.
A0484	New York Extension Service	"
A0545	New York Department of Commerce	"
A0269	New York Conservation Department	"
A0272	New York State Department of Health	"
A0273	New York Soil Conservation Committee	"
A0514	College of Forestry Syracuse University	"
A0274	Cornell University Department of Conservation	"
A0525	New York State Air Pollution Control Board	"

A0278	North Carolina Department of Agriculture	N.C.
A0485	North Carolina Extension Service	"
A0279	North Carolina Department of Conservation and Dev.	"
A0446	North Carolina State Museum	"
A0281	North Carolina State Soil and Water Conservation Com.	"
A0282	North Carolina Department of Water Resources	"
A0284	North Carolina Wildlife Resources Commission	"
A0486	North Dakota Extension Service	N.D.
A0286	North Dakota School of Forestry	"
A0291	North Dakota Soil Conservation Committee	"
A0292	North Dakota Conservation Commission	"
A0506	Ohio Extension Service	Ohio
A0447	Ohio Department of Economic Development	"
A0294	Ohio Department of Health	"
A0515	Ohio Department of Highways	"
A0448	Ohio Department of Highway Safety	"
A0297	Ohio Department of Natural Resources	"
A0299	Ohio Soil Conservation	"
A0546	Ohio Archeological and Historical Society	"
A0295	The Miami Conservancy District	"
A0298	Natural Resources Institute of Ohio State University	"
A0301	Ohio Cooperative Wildlife Research Unit	"
A0540	Oklahoma Extension Service	Okla.
A0304	Oklahoma Geological Survey	"
A0307	Oklahoma Department of Wildlife Conservation	"
A0308	Oklahoma Cooperative Wildlife Research Unit	"
A0487	Oregon Extension Service	Ore.
A0312	Oregon Fish Commission	"
A0313	Oregon Department of Forestry	"
A0314	Oregon Game Commission	"
A0315	Oregon Dept. of Geology and Minerals Industry	"
A0316	Oregon State Board of Health	"
A0317	Oregon State Highway Department	"
A0318	Oregon State Marine Board	"
A0319	Oregon State Committee on Natural Resources	"
A0321	Oregon State Soil Conservation Committee	"
A0322	Oregon Water Resources Board	"
A0323	Pennsylvania Department of Agriculture	Pa.
A0488	Pennsylvania Extension Service	"
A0523	Pennsylvania Department of Commerce	"
A0324	Pennsylvania Fish Commission	"
A0325	Pennsylvania Department of Forests and Waters	"
A0326	Pennsylvania Game Commission	"
A0327	Pennsylvania State Soil Conservation Commission	"
A0328	Pennsylvania Department of Health	"
A0329	Pennsylvania Bureau of Topological and Geol. Survey	"
A0517	College of Mineral Industries Pa. State University	"
A0346	South Carolina State Development Board	S.C.
A0347	South Carolina State Soil Conservation Committee	"
A0492	South Carolina Extension Service	"
A0351	South Dakota Conservancy District	S.D.
A0353	South Dakota Geological Survey	"
A0359	Tennessee Department of Conservation	Tenn.

A0360	Tennessee Game and Fish Commission	Tenn.
A0531	Tennessee Department of Highways	"
A0532	Tennessee State Library	"
A0529	Tennessee State Planning Commission	"
A0362	Tennessee Stream Pollution Control Board	"
A0494	Texas Extension Service	Tex.
A0366	Texas Forest Service	"
A0367	Texas Department of Parks and Wildlife	"
A0369	Texas Department of Health	"
A0495	Utah Extension Service	Ut.
A0377	Utah Department of Fish and Game	"
A0382	Utah Park and Recreation Commission	"
A0383	Utah Soil Conservation Committee	"
A0496	Vermont Extension Service	Vt.
A0388	Vermont Fish and Game Commission	"
A0392	Vermont Recreation Department	"
A0394	Vermont Department of Water Resources	"
A0395	Virginia Department of Agriculture and Immigration	Va.
A0497	Virginia Extension Service	"
A0396	Virginia Dept. of Conservation and Economic Dev.	"
A0398	Virginia Commission of Game and Inland Fisheries	"
A0400	Virginia Institute of Marine Science	"
A0405	Virginia Co-op Wildlife Res. Unit Vir. Polytech Inst.	"
A0411	Washington Department of Fisheries	Wash.
A0412	Washington Department of Game	"
A0413	Washington Department of Natural Resources	"
A0414	Washington Parks and Recreation Commission	"
A0415	Washington Pollution Control Commission	"
A0499	West Virginia Extension Service	W.Va.
A0418	West Virginia Geological and Economic Survey	"
A0419	West Virginia Department of Natural Resources	"
A0421	West Virginia Soil Conservation Committee	"
A0420	Oglebay Institute	"
A0500	Wisconsin Extension Service	Wis.
A0539	Wisconsin State Aeronautics Commission	"
A0425	Wisconsin Conservation Department	"
A0426	Wisconsin Geological and Natural History Survey	"
A0544	Wisconsin Department of Motor Vehicles	"
A0428	Wisconsin Department of Resource Development	"
A0429	Wisconsin Soil Conservation Committee	"
A0430	Wisconsin Committee on Water Pollution	"
A0520	Cartographic Institute	"
A0547	Wisconsin School of the Air University of Wisconsin	"
A0433	Wyoming Department of Agriculture	Wyo.
A0501	Wyoming Extension Service	"
A0435	Wyoming Game and Fish Commission	"
A0436	Wyoming Geological Survey	"
A0438	Wyoming Natural Resources Board	"

State-Level Organizations (Private, Non-Governmental)

B0002	Alabama Orinthological Society	Ala.

B0005	Alaska Conservation Society	Alaska
B0189	Arizona Assn. of Soil Cons. Dist. Supervisors	Ariz.
B0010	California Conservation Council	Calif.
B0268	California Redwood Association	"
B0016	The Save The American River Association	"
B0184	Historical Society of Colorado	Colo.
B0024	Connecticut Forest and Park Assn., Inc.	Conn.
B0194	Delaware Assn. of Soil Conservation Districts	Del.
B0032	Florida Audubon Society	Fla.
B0034	Izaak Walton League of America, Inc.	"
B0196	Georgia Assn. of Soil and Water Conservation	Ga.
B0198	Idaho Assn. of Soil Conservation Districts	Idaho
B0048	Acres, Inc.	Ind.
B0186	Our Heritage Trails	"
B0051	Iowa Ornithologists Union	Iowa
B0052	Iowa Division Izaak Walton League of America, Inc.	"
B0054	Kansas Wildlife Federation, Inc.	Kans.
B0204	Louisiana Assn. of Soil and Water Cons. Dist. Super.	La.
B0064	Maine Audubon Society	Me.
B0067	Maryland Wildlife Federation	Md.
B0267	Massachusetts Assn. of Cons. Commissioners	Mass.
B0207	Massachusetts Assn. of Conservation Districts	"
B0075	Massachusetts Audubon Society, Inc.	"
B0077	The Mass. Federation of Sportsmens Clubs, Inc.	"
B0078	Massachusetts Forest and Park Assn.	"
B0178	New England Wildflower Preservation Society, Inc.	"
B0084	Michigan Natural Resources Council	Mich.
B0270	Keep Minnesota Green	Minn.
B0209	Minn. Assn. of Soil and Water Cons. Dists.	"
B0085	Minn. Conservation Federation	"
B0253	Minnesota Arrowhead Association	"
B0237	Minnesota Resort Association	"
B0089	Mississippi Forestry Association	Miss.
B0250	Mississippi River Parkway Commission	"
B0185	Civil War Centennial Commission of Missouri	Mo.
B0269	Spotlighting Missouri, Inc.	"
B0254	Nevada Forest Industries Assn.	Nev.
B0182	Buffalo Museum of Science	N.Y.
B0112	Conservation Forum	"
B0114	The Forest Preserve Assn. of New York State, Inc.	"
B0263	Population International Materials Proj.Columbia Univ.	"
B0219	North Carolina Assn. of Soil and Water Cons. Dists.	N.C.
B0116	North Carolina Wildlife Federation, Inc.	"
B0221	Ohio Federation of Soil and Water Cons. Dists.	Ohio
B0125	Ohio Forestry Association, Inc.	"
B0127	Ohio Parks and Recreation Association	"
B0261	Stark Wilderness Center	"
B0222	Oklahoma Assn. Soil and Water Cons. Dists.	Okla.
B0128	Oklahoma Wildlife Federation	"
B0133	Oregon Div. Izaak Walton League of America, Inc.	Ore.
B0136	Brandywine Valley Association, Inc.	Pa.
B0224	Pennsylvania Assn. of Soil and Water Cons. Dists.	"
B0266	Pennsylvania Conservation Association	"
B0135	Pennsylvania Federation of Sportsmens Clubs	"

B0137	Pennsylvania Div. Izaak Walton League of Amer., Inc.	Pa.
B0140	Philadelphia Conservationists, Inc.	"
B0142	Roadside Council, Inc.	"
B0143	Western Pennsylvania Conservancy	"
B0146	Audubon Society of Rhode Island	R.I.
B0149	South Dakota Wildlife Federation	S.D.
B0258	Tennessee Ornithological Society	Tenn.
B0157	Utah Nature Study Society College of S. Utah	Utah
B0164	Virginia Forests, Inc.	Va.
B0168	The Mountaineers	Wash.
B0170	Olympic Natural History Assn.	"
B0174	West Virginia Wildlife Federation	W.Va.
B0243	State Historical Society of Wisconsin	Wisc.
B0252	Wisconsin Dells Association	"
B0248	Wisconsin Game Preserve Assn.	"
B0245	Wisconsin Restaurant and Motel Assn.	"
B0181	Wyoming Conservation Association	Wyo.

Federal Agencies (Governmental)

C0001	Department of Agriculture	Wash.
C0002	Agriculture Research Service USDA	"
C0003	Agricultural Stabilization and Cons. Ser. USDA	"
C0004	Federal Extension Service USDA	"
C0005	Forest Service USDA	"
C0060	Rural Area Development USDA	"
C0006	Soil Conservation Service USDA	"
C0051	U. S. Coast Guard Dept. of Commerce	"
C0008	Area Redevelopment Administration U. S. Dept. of Com.	"
C0010	U. S. Department of Defense	"
C0012	Department of the Army	"
C0019	U. S. Dept. of Health Education and Welfare	"
C0020	Public Health Service	"
C0021	Div. of Water Supply and Pollution Cont. Dept. HEW	"
C0022	U. S. Office of Education	"
C0023	U. S. Dept. of the Interior	"
C0026	Fish and Wildlife Service Dept. of Interior	"
C0029	Bureau of Indian Affairs Dept. of Interior	"
C0030	Bureau of Land Management	"
C0031	Bureau of Mines Dept. of Interior	"
C0032	Bureau of Outdoor Recreation Dept. of Interior	"
C0033	Bureau of Reclamation Dept. of Interior	"
C0037	Geological Survey Dept. of Interior	"
C0038	National Park Service	"
C0041	Atomic Energy Commission	"
C0059	Federal Reserve Bank of Cleveland	"
C0053	Interstate Commission on the Lake Champlain Basin	"
C0067	Northern Great Lakes Area Council	Ill.
C0061	Presidents Appalachian Regional Commission	Wash.
C0052	Presidents Science Advisory Committee	"
C0050	Tennessee Valley Authority	Tenn.
C0062	U. S. Senate	Wash.

C0046	Urban Renewal Administration	Wash.
C0066	Upper Colorado River Commission	Utah

National Organizations (Private, Non-Governmental)

D0254	American Assn. of Agricultural College Editors	Okla.
D0003	American Assn. of Botanical Gardens and Arboretums	Ga.
D0004	American Camping Association, Inc.	Ind.
D0282	AFL CIO	Wash.
D0006	American Fisheries Society	Wash.
D0008	American Forestry Association	"
D0009	American Geographical Society	N.Y.
D0010	American Humane Education Society	Mass.
D0010	American Institute of Park Executives	W.Va.
D0260	The American Legion	Ind.
D0014	American Nature Study Society	N.Y.
D0261	American Public Health Association	N.Y.
D0208	American Society of Civil Engineers	"
D0023	American Society of Range Management	Ore.
D0209	American Water Ski Association	Fla.
D0263	Association of American Geographers	Wash.
D0180	Atlantic States Matine Fisheries Commission	Fla.
D0283	Atlantic Waterfowl Council	"
D0031	Boy Scouts of America	N.J.
D0032	The Brotherhood of the Jungle Cock, Inc.	Md.
D0034	Camp Fire Girls, Inc.	N.Y.
D0037	Citizens Committee on Natural Resources	Wash.
D0038	Connecticut River Watershed Council, Inc.	Mass.
D0040	The Conservation Foundation	N.Y.
D0043	Defenders of Wildlife	Wash.
D0044	Delaware River Basin Commission	N.J.
D0047	Ducks Unlimited, Inc.	N.Y.
D0058	The Garden Club of America	"
D0059	General Federation of Womens Clubs	Wash.
D0060	Girl Scouts of the United States of America	N.Y.
D0061	Hawk Mountain Sanctuary Association	Pa.
D0226	Hugh Moore Fund	"
D0065	Inland Bird Banding Association	Ill.
D0277	International Commission on Large Dams	N.Y.
D0198	International Commission on National Parks	Wash.
D0195	International Shade Tree Conference	Ohio
D0200	Interstate Advisory Com. on Susquehanna River Basin	Pa
D0210	Interstate Commission on the Potomac Basin	Wash.
D0066	The Izaak Walton League of America	Ill.
D0067	Joint Council on Economic Education	N.Y.
D0068	Keep America Beautiful, Inc.	N.Y.
D0069	League of Women Voters of the U. S.	Wash.
D0212	Mississippi Flyway Council	Wisc.
D0072	Natl. Assn. of Soil and Water Conservation Dists.	Wash.
D0073	National Audubon Society	N.Y.
D0078	Natl. Council of State Garden Clubs	Mo.
D0079	National Farmers Union	Colo.

D0268	National Geographic Society	Wash.
D0153	National Oak Wilt Research Center	Tenn.
D0085	National Parks Association	Wash.
D0089	National Rifle Assn. of America	"
D0215	National Tuberculosis Association	"
D0216	National Water Institute	N.Y.
D0092	National Water Safety Congress	Minn.
D0093	National Wildlife Federation	Wash.
D0094	Natural Resources Council of America	Wash.
D0222	Natural Science Television Project	Mass.
D0095	Natural Science for Youth Foundation	N.Y.
D0096	The Nature Conservancy	Wash.
D0218	Northwest Forest Pest Action Council	Ore.
D0204	Ohio River Valley Sanitation Commission	Ohio
D0106	Outboard Boating Club of America	Ill.
D0205	Pacific Matine Fisheries Commission	Ore.
D0281	Population Reference Bureau, Inc.	Wash.
D0219	Public Affairs Committee	N.Y.
D0234	Red River Valley Development Association	Minn.
D0241	Redwood Region Conservation Council	Calif.
D0112	Resources for the Future, Inc.	Wash.
D0220	Safe Progress Association	Fla.
D0115	Society of American Foresters	Wash.
D0116	Soil Conservation Society of America	Iowa
D0118	Southeastern Assn. of Game and Fish	Fla.
D0121	Sport Fishing Institute	Wash.
D0122	The Trailsmen	Ohio
D0123	Trout Unlimited	Mich.
D0124	Trustees for Conservation	Calif.
D0175	Twentieth Century Fund	N.Y.
D0224	Water Research Foundation	"
D0126	Water Resources Assn. of the Delaware River Basin	Pa.
D0127	Western Assn. of State Game and Fish Commissioners	Mont.
D0131	Wilderness Society	Wash.
D0134	Wildlife Management Institute	"
D0135	Wildlife Restoration, Inc.	N.Y.
D0136	The Wildlife Society	Wash.
D0273	Young Mens Christian Association	N.Y.

State Departments of Education

G0005	Arkansas Department of Education	Ark.
G0006	California Department of Education	Calif.
G0055	Colorado Department of Education	Colo.
G0010	Florida Department of Education	Fla.
G0011	Georgia Department of Education	Ga.
G0015	Illinois Department of Public Instruction	Ill.
G0016	Indiana Department of Public Instruction	Ind.
G0020	Louisiana Department of Education	La.
G0021	Maine Department of Education	Me.
G0022	Maryland Department of Education	Md.
G0023	Massachusetts Department of Education	Mass.

G0024	Michigan Department of Public Instruction	Mich.
G0025	Minnesota Department of Education	Minn.
G0027	Missouri Department of Education	Mo.
G0028	Montana Department of Public Instruction	Mont.
G0029	Nebraska Department of Education	Neb.
G0030	Nevada Department of Education	Nev.
G0031	New Hampshire Department of Education	N.H.
G0032	New Jersey Department of Education	N.J.
G0034	New York State Education Department	N.Y.
G0036	North Dakota Department of Public Instruction	N.D.
G0037	Ohio Department of Education	Ohio
G0039	Oregon Department of Education	Ore.
G0040	Pennsylvania Department of Public Instruction	Pa.
G0044	South Dakota Department of Public Instruction	S.D.
G0045	Tennessee Department of Education	Tenn.
G0046	Texas Education Agency	Texas
G0048	Vermont Department of Education	Vt.
G0049	Virginia Department of Public Instruction	Va.
G0052	West Virginia Department of Education	W.Va.
G0053	Wisconsin Department of Public Instruction	Wisc.
G0054	Wyoming Department of Education	Wyo.

State-Level Educational Organizations

I0025	Minnesota Education Association	Minn.
I0050	Washington Education Association	Wash.

National Educational Organizations

J0008	Assn. For Health Physical Education and Rec.	Wash.
J0046	The Conservation Education Association	Mont.
J0050	Department of Classroom Teachers NEA	Wash.
J0069	National Council For Geo. Education Ill. State Univ.	Ill.
J0070	National Council For the Social Studies NEA	Wash.
J0072	National School Boards Assn., Inc.	Ill.
J0075	National Science Teachers Association	Wash.

Industrial and Trade Associations

K0003	Alabama Forest Products Association	Ala.
K0004	American Forest Products Industries, Inc.	Wash.
K0006	American Ladder Institute	Ill.
K0007	American Paper and Pulp Association	N.Y.
K0010	American Walnut Manufacturers Assn.	Ill.
K0013	Appalachian Hardwood Manufacturers, Inc.	Ohio
K0023	Douglas Fir Plywood Association	Wash.
K0032	Hardwood Plywood Institute	Va.
K0035	Industrial Forestry Association	Ore.
K0043	National Assn. of Furniture Manufacturers, Inc.	Ill.
K0059	Northern Hemlock and Hardwood Manufacturers Assn.	Wisc.

K0065	Pacific Logging Congress	Ore.
K0079	Southeastern Pine Marketing Institute	Ga.
K0084	Southern Pine Association	La.
K0092	Western Wood Products Association	Ore.
K0097	Western Red Cedar Lumber Association	Wash.
K0108	Southeastern Lumber Manufacturers Assn.	Ga.
K0110	Forest Industries Committee	Pa.
K0111	Utah Forest Industries Committee	Utah
K0112	Wisconsin Paper Industry	Wisc.
K0115	National Coal Assn.	Wash.
K0117	Southern Pulp Wood Conservation Association	Ga.
K0118	The Soap and Detergent Association	N.Y.
K0119	National Plant Food Institute	Wash.
K0120	American Water Works Association, Inc.	N.Y.
K0121	Clay Products Association	Ill.
K0122	National Agricultural Chemicals Assn.	Wash.
K0125	American Gas Association Educational Services	N.Y.
K0126	Amer. Petroleum Inst. CPA School Program Section	"
K0127	National Assn. of Manufacturers	N.Y.
K0129	Trees for Tomorrow, Inc.	Wisc.
K0132	The Piping Industry Development Council, Inc.	Minn.
K0135	American Iron Ore Association	Ohio
K0136	American Iron and Steel Institute	N.Y.
K0138	Independent Petroleum Association of America	Okla.
K0139	Portland Cement Association	Ill.
K0140	Mined Land Conservation Conference	Wash.
K0142	Sugar Information, Inc.	N.Y.
K0143	National Dairy Council	Ill.
K0145	National Sand and Gravel Association	Md.
K0147	American Mining Congress	Wash.
K0149	American Institute of Mining Engineering	N.Y.
K0150	ABC'S of Industry	N.Y.
K0152	U. S. Trout Farmers Association	Utah
K0153	Boating Industry Association	Ill.
K0154	National Park Concessions, Inc.	Ky.
K0155	Tobacco Tax Council	Va.
K0156	National Shooting Sports Foundation	Conn.
K0157	Institute Scrap Iron and Steel	Wash.
K0159	National Fire Protection Association	Mass.
K0160	American Association of Railroads	Wash.
K0161	Manufacturing Chemists Association	Wash.

Industries

Kind of Industry (Code letter in column 77)

Agriculture and food = A
Publishers = B
Commerce = C
Forest = F
Manufacturers - General = G
Insurance = I

Mining = M
Petroleum = P
Transportation = T
Utilities = U
Miscellaneous = X

Combination Codes

E = A+F+P
H = F+G
J = F+V
K = G+T

N = A+P
O = G+X
Q = M+F
R = A+F+G

S = A+M
W = A+G
Z = M+G

L1003	Aetna Insurance Company	(I)	Conn.
L0328	Allis Chalmers Manufacturing Company	(A)	Wisc.
L0556	American Can Company	(W)	N.Y.
L1028	American Electric Power	(U)	N.Y.
L0881	American Oil Company	(P)	Ill.
L0565	American Optical	(G)	N.Y.
L1031	American Telephone and Telegraph	(U)	"
L0334	Arps Corporation	(A)	Wisc.
L0335	Atlas Scraper and Engineering Company	(A)	Calif.
L0584	Avco	(W)	N.Y.
L0588	BEA Unit	(G)	"
L0589	Beechnut Life Savers	(X)	"
L0591	Bemis Bro. Bag	(W)	Minn.
L0593	Bethlehem Steel	(Z)	Pa.
L0594	Bibb Manufacturing	(G)	Ga.
L0595	Bigelow Sanford	(G)	N.Y.
L0599	Bordens	(A)	"
L0027	Bowaters Southern Paper Corporation	(F)	Tenn.
L0307	Brown and Williamson Tobacco Corp.	(X)	Ky.
L0615	Carnation	(A)	Calif.
L0306	Caterpillar Tractor Company	(A)	Ill.
L0619	Celanese	(H)	N.Y.
L0047	Chesapeake Corp.	(F)	Va.
L0985	Chicago Rock Island and Pacific R.R.	(T)	Ill.
L0629	Cincinnati Milling Machine	(G)	Ohio
L0981	Chesapeake and Ohio Railroad	(T)	Ohio
L0051	Collins Pine Co.	(F)	Pa.
L0640	Commercial Solvents	(W)	N.Y.
L1037	Consolidated Edison	(U)	"
L1039	Consumers Power	(J)	Mich.
L1008	Continental Assurance Company	(I)	Ill.
L0646	Continental Baking	(A)	N.Y.
L0064	Crown Zellerbach Corp.	(F)	Ore.
L0659	Curtiss Wright	(G)	N.J.
L0661	Dan River Mills	(W)	Va.
L0376	Deere and Company	(A)	Ill.
L0986	Delta Air Lines	(T)	Ga.
L1089	Denoyer Geppert Company	(A)	Ill.
L0308	Deposit Guaranty Bank and Trust Co.	(C)	Miss.
L0380	Diamond Alkali Company	(A)	Ohio

L0072	Calif. Lumber Div. Diamond National Corp.	(H)	Calif.
L0381	Domries Farm Implement Manufacturing Company	(A)	"
L0666	Douglas Aircraft, Inc.	(K)	Calif.
L0385	E. I. DuPont De Nemours and Company, Inc.	(A)	Del.
L1041	Duke Power	(U)	N.C.
L0672	Eastman Kodak	(O)	N.Y.
L0679	Engelhard Industries	(G)	N.J.
L0390	Eversman Manufacturing Co., Inc.	(A)	Colo.
L0343	F.M.C. Corporation	(A)	Mich.
L1095	Federal Chemical Company	(A)	Ky.
L1098	Fisherman Press	(B)	Ohio
L0695	Ford Motor Company	(G)	Mich.
L0312	W.H. Freeman and Company	(B)	Calif.
L0309	General Electric	(X)	N.Y.
L0102	Georgia Pacific Corp.	(F)	Ore.
L0407	Gladden Haas, Inc.	(A)	Mich.
L0962	B. F. Goodrich	(G)	Ohio
L0963	Goodyear Tire and Rubber Company	(G)	"
L0313	The H. M. Gousha Company	(B)	Ill.
L0109	Great Northern Paper Company	(F)	Me.
L0970	Grumman Aircraft Engineering	(K)	N.Y.
L0119	J. V. Hammond Lumber Company	(F)	Pa.
L0412	Hancock Manufacturing Company	(A)	Texas
L0415	Harbison Paine, Inc.	(A)	Colo.
L0705	Hershey Chocolate	(A)	Pa.
L1092	Humble Oil and Refining Co.	(P)	Texas
L0991	Illinois Central Railroad	(T)	Ill.
L0718	Ingersoll Rand	(G)	N.Y.
L0428	International Harvester Co.	(A)	Ill.
L0723	International Milling	(G)	Minn.
L0134	International Paper Co.	(F)	N.Y.
L0734	Johnson and Johnson	(G)	N.J.
L1087	Johnson Motors	(G)	Ill.
L0736	Jones and Laughlin Steel	(M)	Pa.
L0738	K.V.P. Sutherland Paper	(F)	Mich.
L0740	Kaiser Industries	(G)	Calif.
L0741	Kaiser Steel	(M)	"
L0743	Kellogg	(A)	Mich.
L0142	Kimberly Clark Corporation	(F)	Wisc.
L0438	Krause Corporation, Inc.	(A)	Kans.
L0439	Kromer Company	(A)	Minn.
L0755	Libbey Owens Ford Glass	(G)	Ohio
L0762	Thomas J. Lipton, Inc.	(A)	N.J.
L0763	Litton Industries	(G)	Calif.
L0448	Marvin Landplane Company	(A)	"
L1012	Massachusetts Mutual Insurance	(I)	Mass.
L0449	Massey Ferguson, Inc.	(A)	Mich.
L1080	McNally Pittsburg Manufacturing Corp.	(G)	Kans.
L1013	Metropolitan Life Insurance Co.	(I)	N.Y.
L0479	Michigan Irrigation Service Corp.	(A)	Mich.
L0169	Minnesota and Ontario Paper Company	(F)	Minn.
L0459	Monsanto Chemical Company	(A)	Mo.
L0795	National Dairy Products	(A)	N.Y.
L0799	National Sugar Refining	(A)	"

L0182	Nekoosa Edwards Paper Company	(F)	Wisc.
L1051	New England Electric System	(U)	Mass.
L0465	New Idea Farm Equipment Company	(A)	Ohio
L0184	New River and Pocahontas Consol. Coal	(Q)	W.Va.
L0310	New York Life Insurance Co.	(I)	N.Y.
L0802	North American Aviation	(K)	Calif.
L0192	Northwest Paper Company	(F)	Minn.
L1054	Ohio Edison	(U)	Ohio
L0197	Olin Nathieson Chemical Corp.	(R)	La.
L0005	Packaging Corp. of America	(F)	Mich.
L0996	Pan American World Airways	(T)	N.Y.
L1059	Pennsylvania Power and Light	(U)	Pa.
L0210	Penobscot Chemical and Fiber Company	(F)	Me.
L0824	Philip Morris	(X)	N.Y.
L0825	Phillips Petroleum	(P)	Okla.
L0484	Portable Aluminum Irrigation Co., Inc.	(A)	Calif.
L0830	H. K. Porter	(G)	Pa.
L0219	Potlatch Foresters, Inc.	(F)	Idaho
L0837	Ralston Purina	(A)	Mo.
L1085	Rand McNally Publishing Company	(B)	Ill.
L0316	Readers Digest	(B)	"
L0487	Republic Steel Corp.	(S)	Ohio
L0858	Savannah Sugar Refining Company	(A)	Ga.
L0870	Sinclair Oil	(P)	N.Y.
L0319	The L. W. Singer Company	(G)	Ill.
L0242	Sinnissippe Forests, Inc.	(F)	Ill.
L0502	A. O. Smith Harvestore Prod. Inc.	(A)	"
L0503	The Soil Mover Corp.	(A)	Neb.
L0248	Sunoco Products Company	(E)	S.C.
L1066	Southern California Edison	(U)	Calif.
L0505	Speedine Implement Manufacturing Co., Inc.	(A)	N.M.
L0880	Standard Brands	(A)	N.Y.
L0320	Standard Oil Company of California	(N)	Calif.
L0263	Standard Packaging Corp.	(F)	Me.
L0886	Stanley Tools	(H)	Conn.
L0893	Sun Oil	(P)	Pa.
L0898	Swift and Company	(A)	Ill.
L1081	Texas Gulf Sulphur Company	(M)	N.Y.
L0903	Thiokol Chemical	(W)	Pa.
L1000	Trans World Airlines	(T)	N.Y.
L0277	Union Bag Camp Paper Corp.	(F)	Ga.
L0519	Union Carbide Corp.	(A)	N.Y.
L1001	Union Pacific Railroad	(T)	Neb.
L0521	United States Steel Corp.	(S)	Pa.
L1099	Universal Marion Corp.	(G)	Fla.
L0524	Van Dusen and Company, Inc.	(A)	Minn.
L0527	Viking Manufacturing Company	(A)	Kans.
L0290	Weyerhaeuser Company	(F)	Wash.
L0529	R. M. Wade and Company	(A)	Ore.

APPENDIX C

TABULATIONS OF NUMBERS OF TITLES FROM EACH PRODUCER AND SUMMARY TABLES

Page

C-1 Number of titles received from each producer tallied by audience addressed

- (A) State agencies C-2
- (B) State organizations C-8
- (C) Federal agencies C-10
- (D) National organizations C-11
- (G) State Departments of Education C-13
- (I) State educational organizations C-14
- (J) National educational organizations C-14
- (K) Industrial associations C-15
- (L) Industries C-17

C-2 Seriation of number of titles per producer C-21

C-3 Number of producers represented for each audience C-22

C-4 Number of titles per audience class for each producer type C-22

C-5 Average number of titles per producer type for each audience class C-23

Table C-1-A Numbers of titles received from each producer tallied by audience addressed

Producer Type And I.D. Code	Numbers of publications for				
	Teachers	Students	Public	Managers	Total
A (State-Level Agencies)					
3		22	11	1	34
7				2	2
11			1		1
18		1	24	1	26
20			4	8	12
24			6		6
25		2	3	1	6
26			12		12
30	5		13	2	20
31		1	2		3
43				3	3
44			5	10	15
45	2		20	15	37
46	1				1
50				1	1
52			27		27
55			1		1
61				1	1
62			10	1	11
63			1		1
66				4	4
70			1		1
71			4	2	6
72	5		13		18
73	1		16	1	18
74			20		20
77			3	1	4
78			3	1	4
79			2		2
81			1		1
83			3	1	4
85			4	3	7
86	1	2	9	2	14
87	1		24	1	26
88			5	1	6
89			16		16
90			3	6	9
93				1	1
96	1		1		2
99			1		1
100			1		1
109	2	4	3		9
110			3		3

Table C-1-A Continued

Producer Type And I.D. Code	Numbers of publications for Teachers	Students	Public	Managers	Total
116	5	7	95	72	179
117				1	1
121		1		1	2
124	4	1	17	8	30
125			1		1
126		4	1		5
128			1		1
129				18	18
131			4		4
132			21		21
133	2	2	11	6	21
137			1		1
139			2		2
141			2		2
142	3	2	3		8
143			1		1
145			20	1	21
146	2	1	7	6	16
147			5		5
148			1		1
149	1	5	10		16
152		1	6	2	9
153		2			2
154	1	5	53	2	61
162	5		1		6
166	1				1
169	1	1	18		20
170			5		5
172			3		3
173		2	14	1	17
174	1		1	2	4
175				1	1
176			10		10
177	1				1
181			1		1
184				2	2
189	6	2	15		23
193			6		6
196	5		2		7
197			6		6
199	1	1	64	4	70
200			1		1
201				3	3
203			2	1	3
205			1		1
206		2	11	3	16

Table C-1-A Continued

Producer Type And I.D. Code	Numbers of publications for Teachers	Students	Public	Managers	Total
208			3		3
209	1			1	2
211			1		1
212				2	2
214			1	1	2
215	3	7	48	2	60
216			1		1
219			6	1	7
223	2		10		12
224			1		1
225	2				2
230			1		1
236	1	5	2		8
239			1		1
254			1		1
255			1		1
259			1		1
260		1			1
263		6	16		22
268		1	2		3
269	7	14	405	22	448
272				1	1
273				2	2
274	23	27	77	57	184
278			3	2	5
279			1		1
281	1		3		4
282			1		1
284		2	24		26
286		6	1		7
291			1		1
292			1	4	5
294			4	1	5
295			1		1
297	2	4	197	13	216
298	1		1	1	3
299			2		2
301			1	3	4
304		6			6
307			23		23
308			1		1
312			4		4
313			6	1	7
314			8		8
315		31		1	32
316			4	1	5

Table C-1-A Continued

Producer Type And I.D. Code	Numbers of publications for Teachers	Students	Public	Managers	Total
317			1		1
318		2			2
319			1		1
321			2	1	3
322			2		2
323	1		3	1	5
324	1		15		16
325		1	47	19	67
326		1	39	4	44
327			2		2
328			10	12	22
329		9	8	5	22
346			1		1
347			1		1
351			26		26
353			3	2	5
359	7	1	43	13	64
360	1	1	24	41	67
362			2	2	4
366	5				5
368		13	5		18
369	4	9	84	25	122
377		30	1		31
382			2		2
383				1	1
388			17		17
392	4				4
394			9	2	11
395	2		1		3
396			6		6
398	3		4		7
400	1	3	6	1	11
405			12	2	14
411			4	2	6
412	2		11		13
413			4	2	6
414			4		4
415			3		3
418	1				1
419		1	5		6
420	1		4		5
421			1	1	2
425	5	3	128	32	168
426			1		1
428			2	8	10
429	1	3	11	2	17

Table C-1-A Continued

Producer Type And I.D.	Numbers of publications for				
Code	Teachers	Students	Public	Managers	Total
430				2	2
433		1			1
435	3	4	2		9
436			3		3
438			1		1
441			1		1
442			2		2
444			8	2	10
445			1		1
446			1		1
447			6	5	11
448			1		1
450	1				1
452			4	1	5
453			3	2	5
457		8	4		12
458			4		4
460		3	3	1	7
461			1		1
463	1	1	2	3	7
464	1		4	1	6
465		1	10	4	15
466		5	1		6
468	1		2		3
469		2	5	2	9
470		1	11	5	17
471		5	17	1	23
472		10	2	1	13
474	1				1
475			1	2	3
476	2	2	15	1	20
477	1	1	9		11
478	1				1
479	5	14	15		34
481			2		2
482	1		4	1	6
483			4		4
484		1			1
485			1	1	2
486		1	28		29
487	3	1	4		8
488		1	12	2	15
492	1	1			2
494	2		10		12
495		1	2		3
496	4	8	5	2	19

Table C-1-A Continued

Producer Type And I.D. Code	Numbers of publications for Teachers	Students	Public	Managers	Total
497	3	7	9	1	20
499	4	1			5
500	1	1	21	7	30
501			17	13	30
502	1	16	16		33
503		9	9	2	20
504	6	32	12	1	51
505	6	21	1		28
506		2	34	2	38
507			1		1
514		4	36	38	78
515			2		2
517				1	1
520		1			1
521				1	1
523			16	1	17
525				1	1
529			1	4	5
530		1			1
531			1		1
532	1				1
535			1		1
539	1				1
540		5			5
541			1		1
543			1		1
544			1		1
545			9	1	10
546			1		1
547	1				1
548			3		3
Sub-totals for type of producer					
Producers	73	80	212	112	258
Titles	192	430	2523	609	3754

Table C-1-B Number of titles received from each producer tallied by audience addresses

Producer Type And I.D. Code	Numbers of publications for Teachers	Students	Public	Managers	Total
B - State Level Organizations					
2				1	1
5				1	1
10			3		3
16			3	14	17
24	1		4		5
27			3		3
32	1		7		8
34			1	1	2
48			5	1	6
51			2		2
52		1	2		3
54			1		1
64			2		2
67	1		1		2
75	6	41	20	2	69
77			2		2
78			2		2
84				2	2
85			1		1
89			1	1	2
112	1	1	3		5
114				2	2
116			9		9
125	7	1	3	2	13
127			3		3
128			3		3
133	6	1			7
135			1		1
137			3		3
140			1		1
142			8		8
143			13	3	16
146	2	14	5		21
149			1		1
157	2		3		5
164			3		3
168	1		1		2
170			1		1
174			2		2
181			1		1
182			1		1
184			1		1
185			1		1
186			1		1

Table C-1-B Continued

Producer Type And I.D. Code	Numbers of publications for Teachers	Students	Public	Managers	Total
187			1		1
189				1	1
194	1		2	3	6
196				1	1
198	1			1	2
204	3		2	4	9
207				1	1
209			1		1
219			1	1	2
221				4	4
222			2		2
224			1	2	3
237			1		1
243			3		3
245			1		1
248			1		1
250			2		2
253			1		1
254			1		1
258				1	1
261			2		2
263	1				1
266		2	1	1	4
267				7	7
268		2	4		6
269			1		1
270			2		2
Sub-totals for type of producer					
Producers	14	8	59	23	72
Titles	34	63	162	57	316

Table C-1-C Number of titles received from each producer tallied by audience addresses

Producer Type And I.D. Code	Numbers of publications for				
	Teachers	Students	Public	Managers	Total
C - Federal Agencies					
1	1	8	88	127	224
2		1	2	11	14
3	4	15	16	21	56
4	1	7	3	4	15
5	35	76	158	211	480
6	5	19	104	32	160
8			14	20	34
10			1		1
12	1	2	26	8	37
19	2			1	3
20	5	2	38	12	57
21		3	3	23	29
22	25	1			26
23			18	13	31
26	4	9	76	9	98
29	18	13	6		37
30		1	40	9	50
31			6	145	251
32			6	12	18
33	1	1	74	24	100
37	2	3	26	26	57
38		2	17	9	28
41				1	1
46			3	3	6
50			49	49	98
51			3	1	4
52				1	1
53				1	1
59			1		1
60	1		7	1	9
61				1	1
62				4	4
66			1	7	8
67			1		1
Sub-totals for type of producer					
Producers	14	16	27	29	34
Titles	105	163	787	886	1941

Table C-1-D Number of titles received from each producer tallied by audience addressed

Producer Type And I.D. Code	Numbers of publications for Teachers	Students	Public	Managers	Total
D - National Organizations					
3		1			1
4	2				2
6				2	2
8	6	2	1	1	10
9			1		1
10	6	1	7		14
12			2	1	3
14	5		3	2	10
23		1			1
31		9	1		10
32				1	1
34	1				1
37			1		1
38			3		3
40	4		2		6
43			1		1
44			2		2
47			2		2
58	1	1			2
59			3	5	8
60		2	1		3
61			2	1	3
65			1		1
66			3		3
67	6		1		7
68	3		1		4
69	1		3	11	15
72	1		1		2
73	6		13	1	20
78			1		1
79		1			1
85			1		1
89	5		9	1	15
92			2		2
93	2	3	39	3	47
94			4		4
95	5				5
96	7		5		12
106			11	15	26
112			8	20	28
115				1	1
116	2	5	2	1	10
118			2		2
120	1		1		2

Table C-1-D Continued

Producer Type And I.D. Code	Numbers of publications for Teachers	Students	Public	Managers	Total
122			1		1
123			9	2	11
124			2		2
126	1		2	1	4
127		1			1
131			5	18	23
134		1	2		3
135			1		1
136		1			1
153				1	1
175			3		3
180				1	1
195			1		1
198				1	1
200			1	1	2
201			9	14	23
204				2	2
205			1	2	3
208		2		1	3
209			1		1
212			1		1
215			1		1
216			2		2
218			1		1
219			2		2
220			3	1	4
222		4			4
224			1	1	2
226			2		2
234				1	1
241	2	2	1		5
254	5		7	1	13
260		1	6		7
261			2		2
263				1	1
268		1	1		2
273	2				2
277				1	1
281			14	2	16
282			3		3
283			1		1
Sub-totals for type of producer					
Producers	22	18	63	33	85
Titles	74	39	226	118	458

Table C-1-G Number of titles received from each producer tallied by audience addressed

Producer Type And I.D. Code	Number of publications for Teachers	Students	Public	Managers	Total
G - State Departments of Education					
5	1				1
6	3		2		5
10	1				1
11	10	3			13
15	17	1			18
16	2				2
20	3		1		4
21	2				2
22		4			4
23	3				3
24	8				8
25	1				1
27	1				1
28	1				1
29	10				10
30		2			2
31	2				2
32	4				4
34	37	1	31	1	70
36		1			1
37	4		1		5
39	1				1
40	6		1		7
44	1				1
45	2				2
46	8		1		9
48	1				1
49	2				2
52	2				2
53	5	1		1	7
54	1				1
55	2	3			5
Sub-totals for type of producer					
Producers	29	8	6	2	32
Titles	141	16	37	2	196

Table C-1-I Number of titles received from each producer tallied by audience addressed

Producer Type And I.D. Code	Number of publications for				
	Teachers	Students	Public	Managers	Total
I - State Educators Organizations					
25	2				2
50	1				1
Sub-totals for type of producer					
Producers	2	0	0	0	2
Titles	3	0	0	0	3

Table C-1-J Number of titles received from each producer tallied by audience addressed

Producer Type And I.D. Code	Number of publications for				
	Teachers	Students	Public	Managers	Total
J - National Educational Organizations					
8	2	1	1	1	5
46	10		2		12
50	5				5
69	1				1
70	2				2
72	1		1		2
75	1				1
Sub-totals for type of producer					
Producers	7	1	4	1	7
Titles	22	1	4	1	28

Table C-1-K Number of titles received from each producer tallied by audience addressed

Producer Type And I.D. Code	Number of publications for				
	Teachers	Students	Public	Managers	Total
K - Industrial and Trade Associations					
3			8		8
4	8	8	26	7	49
6			3		3
7			4		4
10			1		1
13		1			1
23			1		1
32		1	7		8
35			2		2
43			1		1
59			1	1	2
65			1	1	2
79			1		1
84				1	1
92	1	1	11		13
97			13		13
108			2		2
110			1		1
111			2		2
112			4	1	5
115		2	8	15	25
117			5		5
118			5	1	6
119	1	1	6	1	9
120		1			1
121			1		1
122			1		1
125	2	5	5	1	13
126	4		5	2	11
127	2		8		10
129	15	7	5	1	28
132				1	1
135			2		2
136	9		1		10
138			3		3
139				2	2
140			5	8	13
142			2		2
143	20	14	10		44
145			4		4
147			8	1	9

Table C-1-K Continued

Producer Type And I.D. Code	Number of publications for				
	Teachers	Students	Public	Managers	Total
149		1	1		2
150		1			1
152			4	2	6
153			1		1
154			1		1
155			4		4
156			9	2	11
157			1		1
159			1		1
160	1		5		6
161			1	1	2
Sub-totals for type of producer					
Producers	10	12	46	18	52
Titles	63	43	201	49	356

Table C-1-L Number of titles received from each producer tallied by audience addressed

Producer Type And I.D. Code	Number of publications for Teachers	 Students	 Public	 Managers	 Total
L - Industries					
5			2		2
27			7		7
47			2		2
51				1	1
54			4		4
64			10		10
72		1	1		2
102			5		5
109			1		1
119			1		1
134	2				2
142	2		1		3
169		1	2		3
182			1		1
184				1	1
192			2		2
197		1	5	1	7
210			1		1
219			11	4	15
242			2		2
248				1	1
263			1		1
277	1				1
290		2			2
306		1	7		8
307			1		1
308			1		1
309		9	3		12
310		1			1
312			1		1
313			1		1
316			3		1
319		7			7
320	3		3		6
328			6	1	7
334			4		4
335			1		1
345			4	1	5
376				1	1
380				1	1
381			1		1
385			1		1
390			3		3
407			1		1

Table C-1-L Continued

Producer Type And I.D. Code	Number of publications for				
	Teachers	Students	Public	Managers	Total
412			1		1
413			5	1	6
428	1		7	1	9
438			4		4
439			2		2
448			1		1
449			1		1
459			1		1
465			2		2
479				2	2
484			1		1
487			1		1
502				1	1
503			5		5
505			4		4
519				6	6
521			6	2	8
524				1	1
527			1		1
529			12		12
556			7		7
565	1		1		2
584			1		1
588			1		1
589			11		11
591			9		9
593				2	2
594			1		1
595			7		7
599		4			4
615			3		3
619			1		1
629				5	5
640			4		4
646	5	1			6
659				1	1
661			15		15
666		1	7		8
672	1		3	2	6
679				1	1
695			1		1
705			3		3
718			1		1
723			1		1
734			4		4
736				1	1

Table C-1-L Continued

Producer Type And I.D. Code	Number of publications for				
	Teachers	Students	Public	Managers	Total
738			1		1
740				1	1
741			1		1
743			1		1
755			1		1
762	1				1
763			1		1
795			1		1
799			1		1
802			6		6
824			4		4
825	2		7	4	13
830	1		1		2
837			2		2
858			1		1
870		9			9
880	1		7		8
881			3		3
886		2			2
893			1		1
898		2			2
903				1	1
962		1			1
963			1		1
970			1	1	2
981			1		1
985			3		3
986		2	1		3
991			2		2
996	5		1		6
1000			1		1
1001			1		1
1003			1		1
1008			1		1
1013	2	2	9		13
1028			5		5
1031			1		1
1037				1	1
1041			2		2
1051			1		1
1054			4		4
1059			6		6
1066			2		2
1080				1	1
1081			1	1	2

Table C-1-L Continued

Producer Type And I.D. Code	Number of publications for Teachers	Students	Public	Managers	Total
1085			1		1
1087			1		1
1089		1			1
1092			1		1
1095			6		6
1098		3			3
1099			1	1	2
Sub-totals for type of producer					
Producers	14	20	110	30	143
Titles	28	52	328	49	457

Table C-2 Number of titles received from each producer tallied by audience addressed

Number of Pieces	Producer Group										Group Totals
	A	B	C	D	G	I	J	K	L	Total	
1	72	26	7	28	10	1	2	16	69	231	
2	24	17		19	7	1	2	10	22	102	
3	17	9	1	10	1			2	9	49	454
4	14	3	2	5	3			3	9	39	
5	16	3		2	3		2	2	5	33	
6	16	3	1	1				3	8	32	
7	7	3		2	2				6	20	
8	4	2	1	1	1			2	4	15	93
9	5	2	1		1			2	3	14	
10	4			4	1			2	1	12	
11-15	19	1	2	6	1		1	6	7	43	
16-20	10	1	1	2	1					24	80
21-25	9	1		2				1		13	
26-30	10		3	2				1		16	
31-40	7		4							11	32
41-50	1		1	1				2		5	
51-60	2		3							5	
61-70	5	1			1					7	
71-80	1									1	16
81-90											
91-100			3							3	
101-120											
121-140	1									1	
141-160			1							1	
161-180	2									2	10
181-200	1									1	
201-250	1		1							2	
251-300			1							1	
301-400											
401-500	1		1							2	
Totals	258	72	34	85	32	2	7	52	143	685	685

C-3 Number of producers of each type represented in each audience class

		For each audience class				Any
Kind	Code	T	S	P	M	Audience
State Agencies	A	73	80	212	112	258
State Level Organizations	B	14	8	59	23	72
Federal Agencies	C	14	16	27	29	34
National Organizations	D	22	18	63	33	85
State Depts. of Education	G	29	8	6	2	32
State Education Organizations	I	2				2
Natl. Education Organizations	J	7	1	4	1	7
Industrial Associations	K	10	12	46	18	52
Industries	L	14	20	110	30	143
Totals		185	163	527	249	685

C-4 Number of titles of materials in collection for each audience class

		For each audience class				Any
Kind	Code	T	S	P	M	Audience
State Agencies	A	192	430	2523	609	3754
State Organizations	B	34	63	162	57	316
Federal Agencies	C	105	163	787	886	1941
National Organizations	D	74	39	226	118	458
State Depts. of Education	G	141	16	37	2	196
State Education Organizations	I	3				3
Natl. Education Organizations	J	22	1	4	1	28
Industrial Associations	K	63	43	201	49	356
Industries	L	28	52	329	49	457
Totals		662	807	4269	1771	7509

C-5 Average number of titles per producer

Kind	Code	For each audience class T	S	P	M	Any Audience
State Agencies	A	2.6	5.4	11.9	5.4	14.6
State Organizations	B	2.4	7.9	2.7	2.5	4.4
Federal Agencies	C	7.5	10.2	29.2	30.6	57.1
National Organizations	D	3.4	2.2	3.6	3.6	5.4
State Depts. of Education	G	4.9	2.0	6.2	1.0	6.1
State Educational Organizations	I	1.5	.0	.0	.0	1.5
Natl. Educational Organizations	J	3.1	1.0	1.0	1.0	4.0
Industrial Associations	K	6.3	3.6	4.4	2.7	6.7
Industries	L	2.0	2.6	2.9	1.6	3.2
Means		3.6	4.9	8.1	7.1	10.9

APPENDIX D

MISCELLANEOUS DATA TABLES

Page

D-1 Response to 2,272 mailed requests for materials D-2

D-2 Comparison of number of titles received by mail and by visitation D-3

D-3 Distribution of analyses sample by sorting cells D-4

D-4 Distribution of titles added to collection by visitation D-5

D-5 Types of materials for two audiences and comparison of sample with the whole D-5

D-6 Distribution of formats by audience groups D-6

D-7 Average number of pages per format type D-6

D-8 Dates of publication of materials for teachers D-7

D-9 Dates of publication of materials for students D-8

D-10 Dates of publication of materials for general public D-9

D-11 Dates of publication of materials for managers D-10

D-12 Comparison of publication dates of dated pieces by audience D-11

D-13 Publication dates of undated titles by audience D-12

D-14 Distribution of undated titles by sorting category D-13

D-15 Unclassified seriation of data on cost per copy D-14

D-16 Readability level of materials for teachers tallied by subject D-15

D-17 Readability level of student materials tallied by subject D-16

D-18 Readability level of general public materials by subject D-17

D-19 Readability of technical materials by subject D-18

D-20 Readability determinations for several magazines D-19

D-21 Readability measurement of some standard textbooks D-20

Table D-1 Responses to requests for material

	Number Addressed	Replies to First Mailing	Replies to Second Mailing	Total Response	Percentage Reply	Added by Miscellaneous Routes
State Agencies (A & G)	525	364	124	522	93	34
State Organizations (B & I)	287	111	74	203	64	18
Federal Agencies (C)	47	35	7	53	89	11
National Organ. (D. & J)	281	142	76	245	78	27
Industrial or Trade Association (K)	93	32	26	88	62	30
Industries (L)	1039	297	329	642	60	16
Totals	2272	981	636	1753	71	136

5

Table D-2 Comparison of numbers of titles received by mail and by visitation

Office Group	Titles Received By Mail	By Visitation	Ratio Visitation:Mail
Johnson-Rinier-Dambach Visitations			
Washington D. C.	453	1272	2.8:1
Rinier Visitations			
Georgia	54	729	13.5:1
Minnesota	46	157	3.4:1
New York	475	891	1.9:1
Pennsylvania	76	350	4.6:1
Tennessee	12	226	18.8:1
Wisconsin	41	292	7.1:1
Total (Rinier)	704	2645	3.8:1
Paar Visitations			
Indiana	49	270	5.5:1
Kentucky	31	54	1.7:1
Michigan	36	73	2.0:1
Missouri	32	122	3.8:1
Total (Paar)	148	519	3.5:1
Grand Total	1305	4436	3.4:1

Table D-3 Distribution of analyses sample

Subject Category	Teacher Material			Student Material			Public Material			Technician's Material			Totals		
	Total Pieces	No. in Sample	%	Total Pieces	No. in Sample	%	Total Pieces	No. in Sample	%	Total Pieces	No. in Sample	%			
General (1)	252	96	38.1	114	40	35.1	255	49	19.2	159	25	16.7	780	210	26.9
Soil (2)	10	5	50.0	58	24	41.4	293	50	17.1	142	23	16.2	503	102	20.3
Water (3)	24	9	37.5	26	11	42.3	384	69	18.0	292	49	16.8	726	138	19.0
Minerals (4)	21	8	38.1	47	17	36.2	133	22	16.5	360	61	16.9	561	108	19.3
Plants (5)	65	23	35.4	189	66	34.9	706	114	16.1	404	68	16.8	1364	271	19.9
Animals (6)	47	15	31.9	223	79	35.4	986	173	17.5	157	27	17.2	1413	294	20.8
Recrea. (7)	24	9	37.5	32	10	31.3	1030	170	16.5	122	20	17.2	1208	209	17.3
Misc. (8)	193	59	30.6	133	44	33.1	490	80	16.3	153	26	15.7	969	209	21.6
Totals	636	224	35.22	822	291	35.40	4277	727	16.99	1789	299	16.71	7524	1541	20.48
Percent Intended			33.33			33.33			16.67			16.67			

Table D-4 Sorting category distribution of titles added to collection by visitation

	Subject								Audience
Audience	Gen.	Soil	Water	Min.	Plants	Animal	Rec.	Misc.	Total
Teachers	39	3	2	3	8	3	10	60	128
Students	11	12	3	5	13	11	3	49	107
Public	73	51	103	29	174	187	363	92	1072
Managers	67	69	129	293	340	68	53	82	1101
Subject Totals	190	135	237	330	535	269	429	283	2408

Table D-5 Types of publications for two audiences and comparison of sample with the whole

	Audience							
	Students				Technical			
	Total		Sample		Total		Sample	
Type of publication	No.	%	No.	%	No.	%	No.	%
Sheets	352	42.6	107	36.8	223	12.4	32	10.7
Booklets	195	23.6	77	26.5	805	44.9	122	40.8
Folders	117	14.1	43	14.8	166	9.3	35	11.7
Pamphlets	85	10.3	36	12.4	384	21.4	66	22.1
Charts	29	3.5	10	3.4	24	1.3	3	1.0
Books	23	2.8	6	2.1	166	9.3	34	11.4
Packets	12	1.5	5	1.7	2	.1	1	.3
Miscellaneous	9	1.1	4	1.4	1	.1	0	0
Periodicals	5	.6	3	1.0	20	1.1	6	2.0
Total	827		291		1791		299	

Table D-6 Distribution of formats by audience groups

Type of Publication	Teacher	Student	Public	Technical	Total	%
Books	18	6	12	34	70	4.5
Booklets	75	77	121	122	395	25.6
Periodicals	3	3	19	6	31	2.0
Packets	8	4	3	1	16	1.0
Charts	11	10	58	3	82	5.3
Folders	22	43	238	35	338	21.9
Sheets	57	107	171	32	367	23.8
Pamphlets	27	36	101	66	230	14.9
Misc.	2	5	4	0	11	.7
Total	223	291	727	299	1540	

Table D-7 Average number of pages per format type

Format	Frequency	Total pages	Average No. of Pages/Format
Booklets	389	13,432	34.53
Periodicals	31	711	2.4
Packets	15	197	1.31
Charts	82	127	1.55
Folders	336	821	2.44
Sheets	334	1,264	3.78
Pamphlets	253	2,518	9.95

Table D-8 Date of publication of materials for teachers by subject

Year	Subject								Totals	%
	01	02	03	04	05	06	07	08		
65	7	1	2	1	2	0	0	27	40	8.81
64	28	1	2	3	4	4	4	41	87	19.16
63	26	1	2	1	13	4	1	25	73	16.07
62	21	1	2	3	11	5	0	24	67	14.75
61	19	0	0	5	3	4	0	12	43	9.47
60	15	2	1	1	5	1	2	12	39	8.59
59	15	0	0	1	2	3	1	5	27	5.94
58	10	0	2	0	1	1	1	2	17	3.74
57	7	0	1	0	1	0	0	7	16	3.52
56	5	0	1	0	3	0	2	2	13	2.86
55	5	0	1	0	1	0	0	1	8	1.76
54	2	0	0	0	0	0	0	1	3	.66
53	5	0	0	0	1	0	0	0	6	1.32
52	4	0	0	0	1	0	0	1	6	1.32
51	3	1	0	0	0	0	3	0	7	1.54
50	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0
48	0	0	1	0	0	0	0	0	1	.22
47	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0
45	1	0	0	0	0	0	0	0	1	.22
Total	173	7	15	15	48	22	14	160		100.0
							Total dated		454	
No date	79	3	9	6	17	25	10	33	182	28.61
							Grand total		636	

Table D-9 Date of publication of materials for students by subject

	Subject									
Year	11	12	13	14	15	16	17	18	Totals	%
65	4	0	0	0	1	4	1	8	18	3.53
64	10	2	3	1	14	17	1	19	67	13.16
63	9	5	4	2	15	36	3	19	93	18.27
62	10	5	3	7	15	20	3	6	69	13.55
61	5	3	2	3	20	20	7	9	69	13.55
60	7	2	2	2	14	8	3	8	46	9.03
59	8	2	1	1	7	2	2	1	24	4.71
58	2	3	0	2	5	1	2	1	16	3.14
57	7	0	1	6	12	4	0	1	31	6.09
56	1	0	1	2	10	5	0	0	19	3.73
55	2	0	0	2	12	4	0	3	23	4.51
54	2	1	0	0	6	0	0	0	9	1.76
53	1	1	0	1	3	5	0	1	12	2.35
52	1	0	0	0	0	3	0	1	5	.98
51	0	0	2	0	1	1	0	0	4	.78
50	0	1	0	0	0	2	0	0	3	.58
49	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	1	0	0	1	.19
Total	69	25	19	29	135	133	22	77		100.0
							Total dated		509	
No date	45	33	7	18	54	90	10	56	313	38.15
							Grand total		822	

Table D-10 Date of publication of materials for publication by subject

	Subject									
Year	21	22	23	24	25	26	27	28	Total	%
65	12	15	14	5	10	11	39	45	151	5.56
64	38	20	47	18	69	87	157	95	531	19.57
63	47	23	65	21	93	102	115	64	530	19.54
62	22	36	40	20	68	135	97	41	459	16.92
61	20	23	42	8	66	55	65	17	296	10.91
60	6	16	23	8	39	49	38	5	184	6.78
59	11	11	15	4	24	51	36	10	162	5.97
58	5	13	4	5	32	28	11	13	111	4.09
57	2	5	12	2	12	20	7	3	65	2.39
56	5	7	6	0	13	12	4	2	49	1.80
55	0	7	5	0	13	23	10	2	60	2.21
54	1	8	6	1	5	13	5	0	37	1.36
53	2	5	2	2	3	6	6	0	26	.95
52	1	1	4	1	4	4	3	1	19	.70
51	0	6	1	0	6	3	1	4	21	.77
50	0	2	1	1	1	2	1	0	8	.29
50	1	0	0	0	1	0	1	0	3	.11
	173	198	287	96	459	601	596	302		
								Total dated	2712	
No date	82	95	97	37	247	385	434	188	1565	36.59
								Grand total	4277	

Table D-11 Date of publication of materials for managers by subject

	Subject									
Year	31	32	33	34	35	36	37	38	Total	%
65	8	4	16	17	18	4	9	10	85	5.38
64	30	12	67	172	47	21	26	32	407	25.48
63	39	16	54	39	43	21	20	29	261	16.34
62	25	19	34	25	40	17	20	16	196	12.32
61	13	16	18	15	34	15	10	18	139	8.70
60	8	7	14	54	34	6	2	6	131	8.20
59	5	12	14	4	22	13	3	7	80	5.01
58	2	13	9	5	17	6	1	7	69	4.32
57	2	5	11	3	14	6	2	5	48	3.00
56	1	4	8	2	27	4	1	1	48	3.00
55	1	7	6	0	13	4	1	0	32	2.00
54	0	6	2	3	16	7	2	1	36	2.25
53	0	2	3	1	13	0	1	1	21	1.31
52	1	3	3	3	5	2	1	0	18	1.12
51	0	3	1	0	7	4	0	0	15	.93
50	0	2	2	1	5	1	0	0	11	.68
	135	131	262	344	355	131	99	133		
							Total dated		1597	
No date	24	11	30	16	49	26	23	20	192	11.08
							Grand total		1789	

Table D-12 Comparison of publication dates of dated pieces by audience

	Teacher		Student		Public		Managers		Totals	
Year	No.	%*	No.	%	No.	%	No.	%	No.	%
65	40	8.8	18	3.5	150	5.5	85	6.3	293	5.5
64	87	19.2	75	14.5	533	19.6	407	25.5	1102	20.8
63	73	16.1	93	18.0	536	19.7	260	16.3	962	18.2
62	67	14.8	69	13.3	461	16.9	196	12.3	793	15.0
61	42	9.3	69	13.3	296	10.9	139	8.7	546	10.3
60	40	8.8	45	8.9	182	6.8	131	8.2	401	7.6
59	27	5.9	24	4.6	161	5.9	80	5.0	293	5.5
58	17	3.7	16	3.1	111	4.1	69	4.3	214	4.0
57	16	3.5	30	6.0	64	2.4	48	3.0	160	3.0
56	13	2.9	19	3.7	49	1.8	48	3.0	130	2.5
55	8	1.8	21	4.4	58	2.2	32	2.0	123	2.3
54	3	.7	9	1.7	36	1.4	36	2.3	86	1.6
53	6	1.3	8	1.9	27	1.0	21	1.3	64	1.2
52	6	1.3	6	1.4	18	.7	18	1.1	50	.90
51	7	1.5	4	.8	19	.7	15	.9	46	.90
50			3	.6	8	.3	11	.7	22	.4
50	2	.4	1	.2	3	.1	6	.4	12	.2
Dated	454		509		2712		1597		5297	99.9
Undated	182		313		1565		192		2252	
Dated & Undated	636		822		4277		1789		7524	

*Percent of total in column

Table D-13 Publication dates of undated titles by audience

	Teacher		Student		Public		Managers		Totals	
Year	No.	%	No.	%	No.	%	No.	%	No.	%
65	2	6.1			4	4.1			6	3.6
64	3	9.1	5	15.2	11	11.2	1	20.0	20	11.8
63	3	9.1	10	30.3	18	18.4	1	20.0	32	18.9
62	7	21.2	3	9.1	10	10.2			20	11.8
61	4	12.1	1	3.0	6	6.1	2	40.0	13	7.7
60	6	18.2	1	3.0	3	3.1			10	5.9
59	2	6.1	2	6.1	8	8.2			12	7.1
58	2	6.1	1	3.0	6	6.1	1	20.0	10	5.9
57	2	6.1			6	6.1			8	4.7
56					4	4.1			4	2.4
55			3	9.1	4	4.1			7	4.1
54	1	3.0			1	1.0			2	1.2
53			3	9.1	1	1.0			4	2.4
52					3	3.1			3	1.8
51			2	6.1	2	2.0			4	2.4
50	1	3.0	1	3.0	3	3.1			5	3.0
50			1	3.0	8	8.2			9	5.3
	33		33		98		5		169	

Table D-14 Distribution of undated titles by sorting category

	Subject								Audience
Audience	1	2	3	4	5	6	7	8	Total
Teacher	79	3	9	6	17	25	10	23	182
Student	44	33	7	18	54	91	10	56	313
Public	83	95	97	37	244	387	434	188	1565
Managers	24	10	29	16	48	24	22	19	192
Subject Total	230	141	142	77	363	527	476	296	2552

Table D-15 Unclassified seriation of data on cost per copy

Cost in cents per copy	f	cf	Cost	f	cf
1/2¢	27	$0.14	$.30	6	$1.80
1	117	1.17	.31		
2	57	1.14	.32	2	.64
3	43	1.29	.33	3	.99
M:6→ 4	40	1.60	.34	2	.68
5	11	.55	.35	2	.70
6	12	.72	.36	3	1.08
7	13	.91	.37	1	.37
8	17	1.36	.38		
9	9	.81	.39		
10	17	1.70	.40	2	.80
11	4	.44	.44	1	.44
12	13	1.56	.46	2	.92
13	2	.26	.48	2	.96
14	3	.42	.49	3	1.47
15	15	2.25	.50	6	3.00
16	1	.16	.60	2	1.20
17	3	.51	.62	1	.62
18	7	1.26	.64	1	.64
19			.68	1	.68
20	10	2.00	.75	2	1.50
21	2	.42	.80	1	.80
22	4	.88	.85	1	.85
23	1	.23	.95	2	1.90
24	2	.48	1.00	4	4.00
25	13	3.25	1.10	1	1.10
26			1.25	1	1.25
27	2	.54	2.00	3	6.00
28			3.00	1	3.00
29	1	.29			
				N = 502	$63.73

Table D-16 Readability level of materials for teachers tallied by subject

	Subject Category									%
Level	1	02	03	04	05	06	07	08	Total	of Total
4 + below	0	0	0	0	0	0	0	1	1	0.5
5	1	0	0	0	0	0	1	1	3	1.6
6	2	0	0	0	1	0	0	0	3	1.6
7	2	0	1	0	0	1	1	1	6	3.2
8	6	1	1	2	2	1	1	3	17	9.1
9	4	0	0	0	3	2	1	6	16	8.6
10	16	1	0	1	4	2	1	4	29	15.6
11	13-	1	2-	2	5	0	1	11-	35	18.8
12	19	1	0	0	2	4	0	5	31	16.7
13	6	0	1	0	1	1	0	3	12	6.4
14	2	0	0	1	1	0	1	6	11	5.9
15	1	0	2	0	2	0	0	4	9	4.8
16 & up	4	0	0	0	1	0	1	7	13	7.0
									186	

Mean = 11.07

Table D-17 Readability level of student materials tallied by subject

	Subject Category									%
Level	11	12	13	14	15	16	17	18	Total	of Total
Below 4	1	1	0	0	4	2	0	0	8	1.4
4	0	0	0	0	1	0	4	4	9	1.5
5	8	1	1	1	9	9	0	2	31	5.2
6	26	3	1	1	11	16	5	1	64	10.8
7	19	1	1	0	15	19	8	7	70	11.8
8	22	2	2	2	20	33	5	4	90	15.2
9	15	0	4	1	17	29	4	7	77	13.0
10	12	4	1	2	22	27	7	4	79	13.4
11	7	3	4	4	28	19	3	3	71	12.0
12	5	5	0	4	8	9	1	4	36	6.1
13	6	0	0	2	5	0	1	2	16	2.7
14	2	0	2	1	2	2	0	3	12	2.0
15	3	0	1	0	3	0	4	2	13	2.2
16 & up	5	3	0	1	6	0	0	0	15	2.5
									591	

Mean = 10.72

Table D-18 Readability level of general public materials by subject

	Subject Cagegory									%
Level	21	22	23	24	25	26	27	28	Total	of Total
Below 4	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	1	1	<0.1
5	2	0	1	0	1	1	3	1	9	0.5
6	1	2	1	0	4	2	7	4	21	1.1
7	3	1	4	0	6	16	18	5	53	2.9
8	5	3	4	2	14	49	41	14	132	7.2
9	7	8	9	6	28	81	47	32	218	11.8
10	9	5	11	4	39	83	77	20	248	13.4
11	13	9	17	13	44	94	90	35	316	17.1
12	13	7	16	10	46	99	78	26	295	16.0
13	6	5	19	2	22	33	39	20	146	7.9
14	7	3	14	2	14	22	26	18	106	5.7
15	5	2	6	5	10	34	26	9	97	5.3
16 & up	18	10	29	8	23	29	41	44	202	11.0
									1844	

Mean = 11.84

Table D-19 Readability of technical materials by subject

Level	Subject Category 01	02	03	04	05	06	07	08	Total	% of Total
Below 4										
4										
5										
6				1					1	0.3
7					1				1	0.3
8	1				1				2	0.7
9	1	1			1	2	3		8	2.8
10		2	3		12	2	1	2	22	7.6
11	2	6	7	7	9	2	1	4	38	13.2
12	2	2	10	6	13	4	2	2	41	14.2
13	2	2	8	3	5	6	4	2	32	11.1
14	2	2	4	10	6	3	3	4	33	11.5
15	7	3	3	11	7	2	3	6	42	14.6
16 & up	7	3	11	28	11	5	2	6	68	23.6
									288	

Mean = 13.29

D-20 Readability determinations for several magazines[1]

Title	Issues	Range Raw Score[2]	Mean Raw Score	Mean Deviation	Mean Reading Level
Teacher					
NEA Journal	9	7.69 - 9.04	8.68	.46	12
Grade Teacher	9	6.26 - 9.17	7.26	.89	9
Instructor	9	4.91 - 8.62	7.14	.84	9
Student					
News Explorer	4	5.09 - 6.15	5.62	.36	6
News Time	12	5.08 - 7.08	6.13	.38	7
Jr. Scholastic	12	5.59 - 8.46	6.93	.62	8
Highlights	9	4.79 - 6.45	5.49	.48	5
Seventeen	9	5.63 - 8.87	6.76	.56	8
Public					
Post	9	5.93 - 8.83	7.40	.68	9
Life	12	6.53 - 9.33	7.88	.75	10
Reader's Digest	9	5.71 - 8.39	7.37	.64	9
Newsweek	9	7.04 - 9.03	7.77	.59	10

1 All issues used were from 1965 or 1966

2 From Dale-Chail formula

3 A change of 0.50 is equivalent to one grade level

Table D-21 Readability measurement of some standard textbooks

Title	Range Raw Score	Mean Raw Score	Mean Reading	Intended Grade
English				
Scott Foresman, Wide Horizons Readers	5.32 - 5.22	5.42	5	4
A & B, Believe and Make Believe	4.87 - 5.02	4.92	4	4
Amer. Book Co., American Adventures	4.46 - 5.04	4.72	4	4
S.F., The New Basic Readers	4.93 - 7.56	6.30	7	6
A.B., Arrivals and Departures	4.58 - 5.79	5.17	5	6
ABC, Adventures Now and Then	5.04 - 5.83	5.43	5	6
S.F. Co., All Around America	5.31 - 6.30	5.80	6	8
A & B, Widening Views	5.21 - 6.68	5.95	6	8
A.B. Co., A World of Experience	5.22 - 7.49	6.11	7	8
S.F.Co., Exploring Life	6.15 - 6.29	6.20	7	10
A & B, Cavalcade of World Writing	5.84 - 6.73	6.19	7	10
A.B. Co., World Expanding	5.89 - 6.70	6.31	7	10
S.F. Co., England in Literature	6.86 - 7.37	7.16	9	12
Cavalcade of British Writing	6.31 - 7.80	6.87	7	12
A.B. Co, Lit. Around the World	5.02 - 7.41	6.22	7	12
Science				
Harcourt, Concepts in Science	5.28 - 6.63	5.79	6	4
Wonderworld of Science	4.66 - 6.03	5.28	5	4
Science in Your Life	4.89 - 5.59	5.17	5	4

Table D-21 Continued

Title	Range Raw Score	Mean Raw Score	Mean Reading	Intended Grade
Concepts in Science	6.36 - 7.31	6.78	8	6
Wonder World of Science	6.09 - 6.24	6.18	7	6
Science for Today and Tomorrow	6.12 - 6.46	6.35	7	6
Heath, Science and Your Future	5.95 - 7.16	6.72	8	8
Scrib., Wonderworld of Science	6.29 - 6.85	6.62	8	8
H.B.W. An Inquiry Into Life	8.08 - 8.58	8.39	11	Sr. Hi.
Biology	6.49 - 7.18	6.81	8	"
Elements of Biology	7.51 - 7.98	7.71	10	"
Social Studies				
The World Around Us	6.19 - 5.72	5.89	6-9	6
The Wide World	6.41 - 8.18	7.06	Jr.Hi.	9
World Geography	6.37 - 8.36	7.51	"	10
Pageant of World History	6.48 - 7.24	6.78	10	8
Living World of History	6.46 - 6.98	6.76	10	8
A World History	6.73 - 8.69	7.73	10	10
Our Living Government	8.24 - 9.03	8.59	12	12
Problems of Democracy	6.69 - 9.44	8.16	12	11
Magruder's Amer. Gov't.	8.32 - 8.64	8.46	12	11

APPENDIX E

INSTRUCTIONS, FORMS, AND DATA TABLES ON THE JUDGING OF THE MATERIALS

		Page
E-1	List of judges	-2
E-2	Instruction to judges	E-4
E-3	Judging Forms	E-11
E-4	Table of weighted values of $\underline{x}$ for quality	E-14
E-5	Table of weighted values of $\underline{x}$ for appearance	E-15
E-6	Table of weighted values of $\underline{x}$ for educational potential	E-15
E-7	Quality means for each sorting category and audience group by judge set	E-16
E-8	Means for appearance judgments for each sorting category and audience group by judge set	E-17
E-9	Correlations matrix for all sets of quality and appearance judgments by audience groups	E-18
E-10	Regression coefficients for stepwise linear regression for @ and A judgments by audience groups	E-19
E-11	List of outstanding titles in each audience group	E-20
E-12	Quality and appearance means and decile for titles which teacher judges would use	E-22

E-1 List of judges and approximate number of judgments for each

Judges	I.D. No.	Position	No. Judgments
Quality Judges			
David L. Erickson	Q 1	Res. Assoc. for Project doctoral student in Conser.	820
E. E. Good	Q 2	Assoc. Prof. of Conser. Dept. of Zoology, OSU	210
David L. Hanselman	Q 3	Assist. Prof. of Conser. Syracuse Sch. of Forest.,N.Y.	350
Randall B. Heiligmann	Q 4	Res. Assist. for Proj. Grad. Stud. in Forest. & Conser., M.S.U.	900
Carl S. Johnson	Q 5	Project Director Assoc. Prof. of Conser.,O.S.U.	1520
William B. Price	Q 6	Chief Naturalist Ohio Div. of Parks	190
			3990
Educational Potential Judges			
Harold Armstrong	EP 1	Assist. Supt. of Schools, Coordinator of Institute Worthington, Ohio	360
H. Bruce Cobbs	EP 2	Principal, secondary Cuyahoga Falls, Ohio	260
Richard F. Dutro	EP 3	Elementary principal Lakewood, Ohio	220
William E. Vejdovec	EP 4	Principal, elementary Lakewood, Ohio	220
Carl S. Johnson	EP 5	Project Director Dir.,Ohio Cons. Lab.	1320
R. H. Eckelberry	EP 6	Emeritus Prof. of Educ. Former Dir.,Ohio Cons.Lab.	300
Russell L. French	EP 7	Teaching Assoc.,(Curriculum) College of Education,OSU	290
John W. Hug	EP 8	Elem. Science Coordinator S.W. City School Dist.,Ohio	210

E-1 List of judges and approximate number of judgments for each (Cont.)

Judges	I.D. No.	Position	No. Judgments
David M. Pendergast	EP 9	Stud. teaching superv. College Education, O.S.U.	230
Joseph F. Stranges	EP 0	Teach. & Soc. Stud. Sup. Columbus schools, Ohio	240
			3650
Elementary teachers			
Nannie L. Johnson	ET 1	5-6 team teacher Worthington Schools, Ohio	450
Judith Kaiser	ET 2	Resource teacher Columbus schools	350
Gloria D. Tribble	ET 3	Elementary teacher, primary Youngstown, Ohio	220
William E. Vejdovec	ET 4	Elem. principal & teacher Lakewood, Ohio	260
Jewell Whitaker	ET 5	Resource teacher Cols. schls. TV teacher-Geo.	320
			1600
Secondary Science teachers			
Alvin E. Arens	ST 1	High Schl. Science, GS&B Borger, Texas	350
Robert M. Ballagh	ST 2	Jr. High Science Columbus, Ohio	300
Philip D. Gay	ST 3	High School Science, BGS San Diego, Calif.	400
Russell W. Jordan	ST 4	High School Math. C.P. Columbus, Ohio	300
Charles A. Lesh	ST 5	Jr. High Science Annapolis, Missouri	310
			1560
Secondary Social Studies			
Herman W. Brown	1	Jr. High Soc. Stud., Geog. Cols., TV teacher, Jr.Hi. Geog.	710
R. D. Burgoon	2	High School Soc. Stud., POD Columbus, Ohio	420
Calvin Smith	3	High School Am. & World Hist. Columbus, Ohio	420
			1550

Project Conservation-Materials
2090 Neil Avenue
The Ohio State University

INSTRUCTIONS FOR JUDGES OF MATERIALS

THE MATERIAL

We have collected nearly 8000 different pieces of "free and inexpensive materials on conservation prepared for or given to schools." We solicited these from over 2400 potential producers: state and federal agencies, state and national organizations, and over 1000 industries and industrial associations.

ARRANGEMENT OF MATERIALS

The "Sorting System" chart posted beside the shelves shows the two-axes system by which materials are sorted: AUDIENCE addressed and RESOURCE discussed. Within each category materials are arranged by producer code. Serial numbers are NOT always consecutive because producer code overrides serial numbers in filing.

SAMPLE

For judging of qualities and for certain other analyses we have selected a "random sample": one-third of all materials addressed to teachers and to students, one-sixth of materials addressed to the general public and to resource managers.

The sample has been selected and is identified by the attachment of a BLUE "routing slip." If, however, you in judging encounter a batch of materials without such tags, check with us. If selection of sample pieces is necessary, tag numbers evenly divisible by 3 or by 6, whichever is applicable.

JUDGING UNIT

The unit for judging is a BOX, i.e. judge all blue-tagged pieces in a file box.

BOXES should be selected so as to cover all audience categories. This can be done by selecting every 3rd or 4th box in teacher and student categories, every 6th, 7th, or 8th in general public and manager categories.

Minimum number of pieces to be judged by each consultant is 150 plus the 20-piece "control" batch. We figure this to be the equivalent of four full days of work.

Minimum length of time to devote to judging is two hours; the ideal, we now believe, is half days.

Judging materials by the scores or hundreds, we are certain, yields more reliable judgments than does judging only a very few. Judging many at one time or in a relatively short span of time yields more readily comparable judgments. Judging materials much faster than an average of 40-50 per day tends to result in cursory examination of materials and very little variation in successive judgments.

KEEPING TRACK OF WORK

1. Initial the BLUE tag on each piece judged.

2. Initial on same blank on BLUE tag outside of box for each box completed.

   - "Quality of Information" judges use space labelled "Quality."
   - "Educational Potential" judges use spaces so labelled.
   - "Teacher-use" judges use the last three spaces, the "Use Estimate" spaces THUS:

     Use estimate 1 __________(elementary teacher)
     Use estimate 2 __________ (secondary science teacher)
     Use estimate 3 __________ (secondary social studies teacher)

   Each piece is judged by one elementary teacher, one secondary science teacher, and one secondary social studies teacher. Each piece is also judged by three conservation specialists and by three educators, i.e. principals, curriculum coordinators, professors or education, etc. Each of these nine judgments is made independent of all other judges.

3. Teacher judges will identify their principal teaching grade of subject on the evaluation forms, BUT IN JUDGING THEY ARE TO CONSIDER THEMSELVES A REPRESENTATIVE OF THE WHOLE "AREA" THEY TEACH IN: grades 1-6, all secondary science, or all social studies.

4. In our JOURNAL record the category or box numbers for work completed for each calendar day in which judging is done.

FILLING OUT JUDGING FORMS

1. There are three different judging forms, one for each group of judges: quality, educational potential, and teacher use. These forms are YELLOW, SALMON, AND GREEN respectively.

2. Record SERIAL NUMBER, PRODUCER CODE, and PUBLICATION DATE for each piece. Title is not needed. These data are all recorded

on the 5 X 8 white data cards attached to each piece.

3. Sign or initial each judgment form. Do in such a way that your cards can readily be identified.

4. Use DATE STAMP on every card to show date on which judging was done.

5. Put rubber band around cards for each day's work; in each such batch arrange by serial number sequence.

6. Teachers indicate teaching level (grade or jhs or shs) and, if secondary, the principal subject taught. Do this on every card. See also No. 3 under "KEEPING TRACK OF WORK."

JUDGING

GENERAL FOR ALL JUDGES: We have not developed criteria or standards. We are instead asking judges to rate certain characteristics on some very simple scale: e.g. poor-mediocre-good. We leave to each judge the responsibility of establishing boundaries or limits for these levels. From previous research we conclude that judges tend to ignore elaborate criteria prepared by others.

1. We suggest that a judge look at several pieces other than those of the SAMPLE before he starts recording judgments. We believe that each judge establishes his own criteria and that he does it in relation to other pieces, that is he compares and thus decides that one piece is better than another. Pieces with certain characteristics become his "standard", and he calls other pieces better than or poorer than his standard.

   Each judge's "standard" will vary from another's in one or more ways. Interest in the subject dealt with is among factors affecting this standard. We want each judge to look at several pieces so as to form or reinforce his standard.

   We so have a way of "weighing" judgments, that is, of statistically computing a judge's "standard" and so assigning a relative value or weight to his judgments. See CONTROL.

2. NULL RATING: See instructions for your class of judges below.

   QUALITY JUDGE may use NULL RATING to indicate that he considers the item IRRELEVANT, that is not at all related to resource use or to conservation education. To do so he puts a large X across all subratings and writes in the word NULL for General Quality Rating.

   EDUCATIONAL POTENTIAL judges are not limited to conservation education. For example, they would not rate health and safety materials as irrelevant whether or not they consider such materials related to conservation. The only escape we have envisioned for educational-potential judges is the insertion of NULL or "O" in front of "low" for EDUCATIONAL POTENTIAL. This is to say that they may say that the material has no conceivable educational use.

TEACHER judges have three specific places for "NULL" ratings, the "none" or "no use" spots on rating forms. Each, however, is with respect to a different use: teacher's own use, students in general, students in the teacher's area.

3. WRITTEN COMMENT: all forms permit short written comment on materials. If space on front of form is not adequate, mark the COMMENT box and write comments on back of card. WE ARE PARTICULARLY INTERESTED IN THOSE MATERIALS YOU JUDGE AS OUTSTANDING, a judgment level not covered by simply marking "good." If you believe a piece is OUTSTANDING we need to know why.

SPECIFIC FOR QUALITY JUDGES:

4. Rate appearance before reading material.
5. Note that a "?" is provided for ACCURACY and for CURRENTNESS. Undated material cannot be rated as "recent" unless there are dates within the test which give evidence of recency.
6. Rate GENERAL QUALITY without attempting to derive any numerical or weighted value from the five subratings.
7. Comments can be made on back of form; mark box on front.

SPECIFIC FOR EDUCATIONAL-POTENTIAL JUDGES:

4e. Rate APPEARANCE before reading material.

5e. Rate GENERAL QUALITY after scanning material. Quality should be independent of appearance.

6e. USE AREA is the geographic area in which material is applicable or useable. If use area is limited, assume you are judging for the applicable area.

7e. EDUCATIONAL POTENTIAL is your most important rating.

SPECIFIC FOR TEACHER JUDGES:

4t. Rate APPEARANCE before reading.

5t. Rate GENERAL QUALITY after scanning and spot reading.

6t. USE AREA is the geographic area in which material may apply regardless of whether or not material is judged useful for either teachers or for students.

7t. TEACHER'S OWN USE: You are offered a series of alternatives each a higher usefulness rating than the preceding one. Check ONE ONLY.

8t. IS IT USEFUL FOR STUDENTS?

If judgment is YES, circle ONE or at most TWO adjacent grade levels. Note that the series includes COLLEGE (general education), TEACHER EDUCATION AND CONSERVATION PROFESSIONALS.

If judgment is NO, circle ONE of the two reasons which are offered. NO here means an automatic NONE for the next question.

9t. USE I WOULD HAVE MY STUDENTS MAKE OF IT: You are offered another series of alternatives from lowest to highest use. By "reference shelf" we mean making it available without directing attention to it. If specific materials are called to the attention of students, we say you are using it as "supplementary material for all." Assignments for some students, e.g. advanced or slow, is a higher use than the supplementary materials rating.

The series is constructed from teacher responses to the question asked. Consider the question as applying to students in any of the grades or courses in your AREA; an elementary teacher considers grades 1-6 (we don't have any kindergarten materials); a science teacher considers all secondary science courses. Only by circling a more limiting grade level in the previous question does a judge limit grades or courses within his area.

CONTROL

Judges should not try to ration poor, mediocre and good ratings. You are under no obligation to average a "2.0".

Statistical analysis provides a means by which we can "weigh" each judge's "standard". To obtain a base for this analysis ALL JUDGES RATE A BATCH OF MATERIALS CONSTITUTING THE CONTROL.

1. Judge the CONTROL after the completion of one calendar day of judging, and the equivalent of at least one-half day of work. There are 20 pieces in the CONTROL, one from each of 20 sorting categories. They have been gathered into one packet; get it from one of the project staff.

2. Use a felt pen to make a heavy black line at the top of each of 20 evaluation forms you will use for the CONTROLS.

3. If you find that you are the first to judge any of the control pieces, prepare a duplicate card for your judging records and initial the appropriate space on the BLUE tag attached to the CONTROL piece.

4. Date stamp each card, arrange in serial-number order, put a rubber band around the batch, and give it to Johnson or Erickson.

5. The CONTROL list follows on the next page. Do be aware of the fact that you should be judging these in the same manner as you have been judging other pieces in the 1500 piece sample from our collection of nearly 8000 pieces of free and inexpensive materials.

GENERAL INFORMATION

Each piece is judged by nine persons. Each person's judgment is independent of another's. This is the "new" aspect of our system; we are not using committees. Each judge rates at least 150 pieces; most evaluation programs discussed in the literature have rated 20 to 50 pieces. Some potential judges do not seem to have capability for "discrimination;" some persons lose discrimination power with increase in number of judgments.

We do hope that you find the materials and the challenge of judgment interesting.

LIST OF MATERIALS IN THE CONTROL: The "control" is a selection of 20 pieces, one from each of 20 sorting categories, to be judged by all project judges for the comparison and weighing of their judgments.

Serial No.	Producer	Title
110005	Missouri Cons. Comm.	In Your Hands
120005	Soil Cons. Society	Help Keep Our Land Beautiful
130017	Caterpillar	Needed: Much More Water...And Quickly
140016	Mass. Audubon Society	The Rock Cycle
150037	Mass. Audubon Society	Trees-An Aid to Identification
160110	Virginia Inst. Marine Science	The Adventures of Little Oyster
170007	Boy Scouts of America	Fishing, Merit Badge Series
180013	Wildlife Society	Career for You in Wildlife Cons.
210025	Ohio Dept. Nat. Res.	Untitled sheet
220012	Soil Cons. Service	Tips for City and Suburban Dwellers
230041	Wash. Poll. Cont. Ctr.	Pollution Control Doesn't Cost; It Pays
240006	Ill. Geological Sur.	Guide Leaflet: Geol. Sc. Field Trip
250120	Wisc. Cons. Dept.	Wisconsin Wild Flowers
260126	U. Kans., Mus. Nat.Hist.	Collecting and Preparing... Vertebrate Spec.
270552	U.S. Forest Service	Alvin Creek Forest Tour
280006	Ky. Div. of Forestry	Ky. Div. of Forest:What It Does...
010000	Ind. Dept. of Cons.	Handbook for Field Trips
020015	S. Dak. Coop. Ext. Ser.	"Know Your Land" Program for S.Dak.
030003	Ind. Dept. of Cons.	Cons. of Water-Unit II of Cons.Ed.
040006	Am.Nat.Study Society	Nature Study Tips-Time Lapse Geol.

Make certain all CONTROL judging cards are black marked at their top edge (instruction #2, page 5).

Give CONTROL JUDGMENTS to us separate from other work.

The control procedures were developed
by David Hanselman of Syracuse University,
our first Quality judge

QUALITY JUDGMENT

Serial No.____________

Title______________________________

____

Category____Producer________Date______

APPEARANCE: poor mediocre good

QUALITIES OTHER THAN APPEARANCE

BIAS: objectionable passable clean

INFORMATIVENESS: low mediocre high

ACCURACY: poor mediocre good ?

CURRENTNESS: obsolete passable recent ?

CLARITY: poor mediocre good

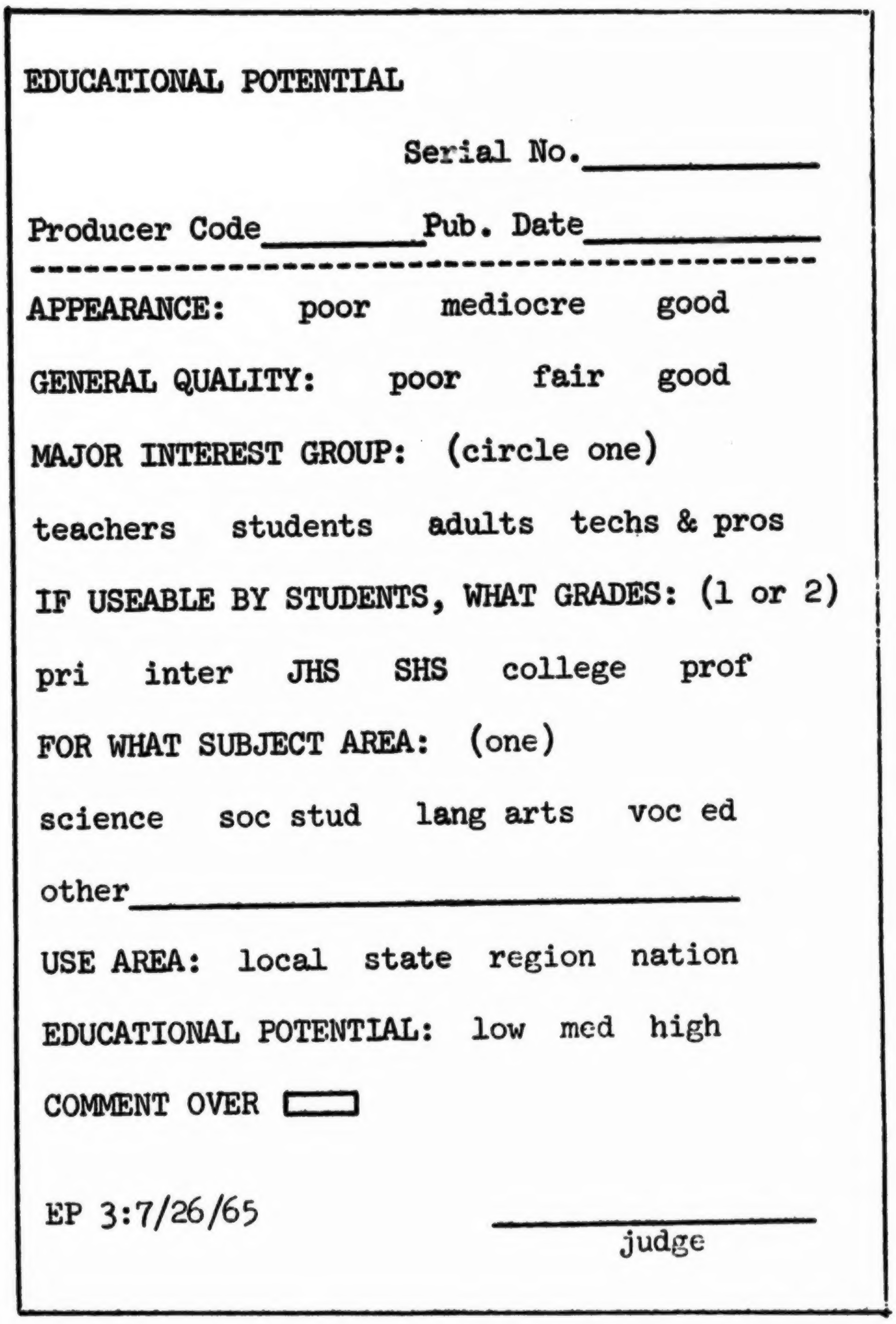
GENERAL QUALITY RATING: poor fair good

Comments over ▱

____
judge

E-3.1

The form developed for use by resource specialists. Their instructions do not define or otherwise give criteria for rating bias, informativeness, etc. They are instructed to make final quality rating without attempting to sum up or to weight the five quality aspects listed. A judge may pass by a piece by writing "null" following GENERAL QUALITY RATING.



EDUCATIONAL POTENTIAL

Serial No.____________

Producer Code_________Pub. Date_____________

APPEARANCE: poor mediocre good

GENERAL QUALITY: poor fair good

MAJOR INTEREST GROUP: (circle one)

teachers students adults techs & pros

IF USEABLE BY STUDENTS, WHAT GRADES: (1 or 2)

pri inter JHS SHS college prof

FOR WHAT SUBJECT AREA: (one)

science soc stud lang arts voc ed

other______________________________

USE AREA: local state region nation

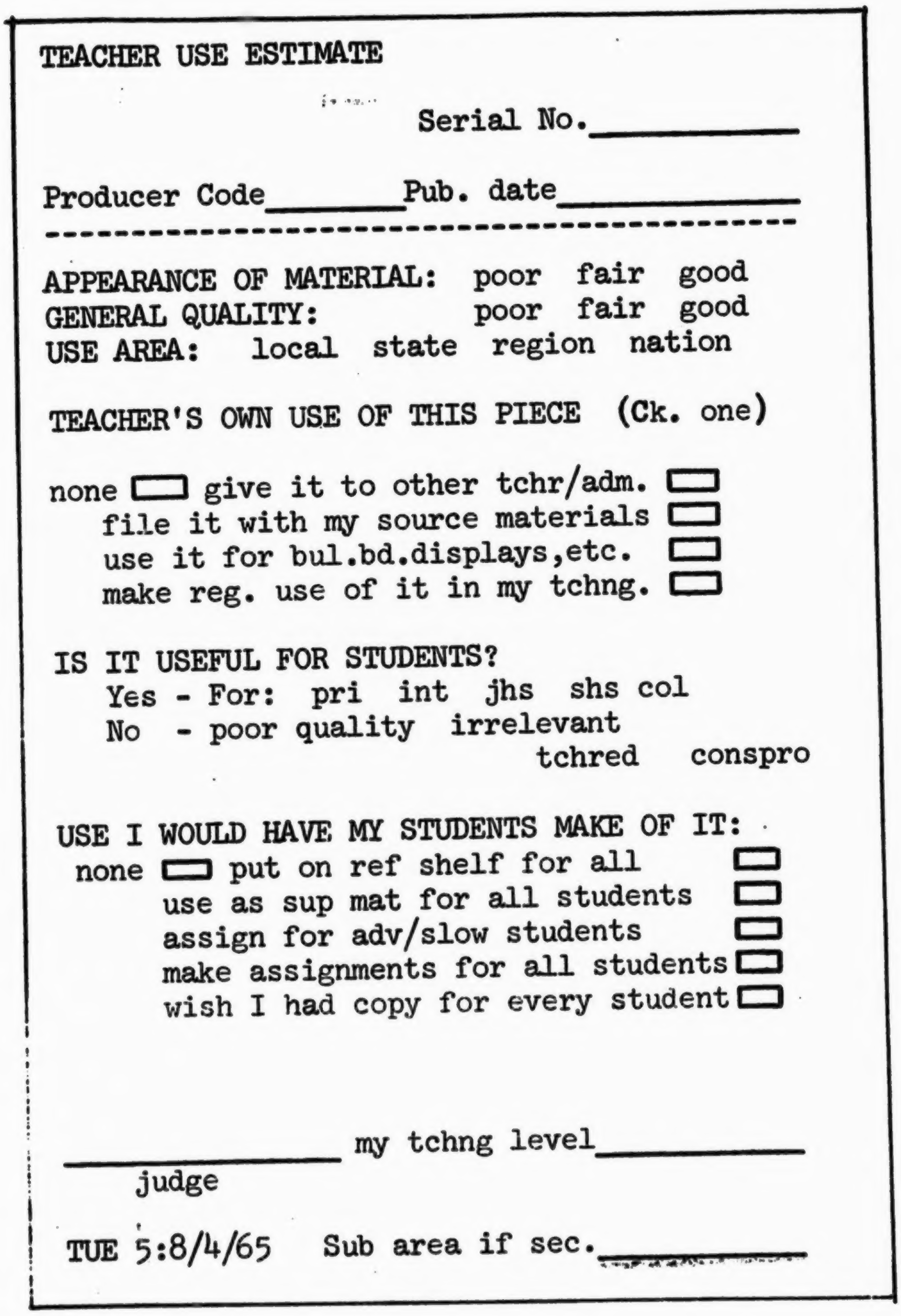
EDUCATIONAL POTENTIAL: low med high

COMMENT OVER ☐

EP 3:7/26/65 ____________________
judge

E-3-2

As in the case of quality judging the most important judgment made by "professional educators" is the last one on their respective forms. Again, no criteria are provided except that the term technicians, professionals, and region are defined. No "null" rating is allowed; the professional educator is responsible for making a decision as to the educational potential of any piece of free and inexpensive materials.



TEACHER USE ESTIMATE

Serial No.__________

Producer Code_______Pub. date____________

APPEARANCE OF MATERIAL: poor fair good
GENERAL QUALITY: poor fair good
USE AREA: local state region nation

TEACHER'S OWN USE OF THIS PIECE (Ck. one)

none ☐ give it to other tchr/adm. ☐
file it with my source materials ☐
use it for bul.bd.displays,etc. ☐
make reg. use of it in my tchng. ☐

IS IT USEFUL FOR STUDENTS?
Yes - For: pri int jhs shs col
No - poor quality irrelevant
tchred conspro

USE I WOULD HAVE MY STUDENTS MAKE OF IT:
none ☐ put on ref shelf for all ☐
use as sup mat for all students ☐
assign for adv/slow students ☐
make assignments for all students ☐
wish I had copy for every student ☐

______________ my tchng level__________
judge

TUE 5:8/4/65 Sub area if sec.__________

E-3-3

For teachers also the most important judgment is the last one on the form used. However, we define "my students" as any students in any of the courses of the teacher's subject area or elementary grade group: secondary sciences, secondary social studies, primary (K-3), or intermediate (4-6).

Table E-4 Table of weighted values for x for all quality judgments

Judge I.D. Number	Judge Set or Sub Set Q*	EP	ET	ST	SST
1	1.98	1.89	2.13	1.92	1.79
2	2.08	2.00	2.04	2.17	1.89
3	2.33	2.17	1.75	2.00	1.82
4	2.17	1.85	1.69	2.33	
5	2.33	2.27	2.08	1.89	
6	2.38	1.92			
7		2.33			
8		1.82			
9		2.17			
0		2.04			

*Q = Quality judges
EP = Educational potential judges
ET = Elementary teachers
ST = Science teachers
SST= Social Studies teachers

Table E-5 Table of weighted values for x for appearance judgments

Judge	Judge Set or Sub Set				
I.D. Number	Q	EP	ET	ST	SST
1	2.27	2.08	2.44	2.08	1.92
2	2.00	2.04	2.22	2.33	2.04
3	2.13	2.22	1.89	2.00	2.04
4	3.57	2.04	2.08	2.78	
5	2.17	2.00	2.22	2.13	
6	2.86	2.13			
7		2.50			
8		1.85			
9		2.22			
0		1.92			

Table E-6 Table of weighted values for x for educational potential judgments

Judge I.D. Number	x
1	2.08
2	3.23
3	2.56
4	2.33
5	2.50
6	1.92
7	2.56
8	2.50
9	3.45
0	2.08

Table E-7 Quality means for each sorting category and audience group by judge sets

Sorting Category	Code	Judge Set			
		Q	EP	T	Grand
Teacher					
General	01	5.10	4.73	4.89	4.91
Soil	02	4.81	5.16	4.70	4.89
Water	03	4.62	5.08	5.04	4.91
Minerals	04	5.81	5.72	5.54	5.69
Plants	05	4.93	5.12	4.97	5.01
Animals	06	4.22	5.08	5.11	4.81
Recreation	07	2.69	4.28	4.49	3.81
Miscellaneous	08	2.90	5.02	4.71	4.17
Teacher Group		4.35	4.91	4.88	4.71
Student					
General	11	4.35	4.66	4.90	4.64
Soil	12	4.65	4.73	4.15	4.51
Water	13	4.75	4.85	5.32	4.97
Minerals	14	4.95	5.24	5.11	5.10
Plants	15	4.42	4.88	4.91	4.74
Animals	16	4.21	4.50	5.14	4.62
Recreation	17	4.01	5.06	4.71	4.59
Miscellaneous	18	3.18	5.10	4.74	4.34
Student Group		4.22	4.79	4.90	4.64
Public					
General	21	4.70	4.57	4.72	4.66
Soil	22	4.12	5.10	5.16	4.82
Water	23	4.81	5.05	4.88	4.90
Minerals	24	4.57	4.80	4.94	4.78
Plants	25	4.44	4.81	4.85	4.71
Animals	26	5.16	4.67	4.73	4.86
Recreation	27	4.50	4.40	4.52	4.48
Miscellaneous	28	2.99	4.76	4.36	4.08
Public Group		4.54	4.70	4.71	4.65
Manager					
General	31	5.06	5.09	4.68	4.94
Soil	32	5.19	4.85	5.17	5.11
Water	33	5.44	4.96	4.98	5.13
Minerals	34	5.19	4.85	4.93	5.00
Plants	35	5.50	5.28	5.06	5.25
Animals	36	4.49	4.84	5.08	4.84
Recreation	37	4.51	4.67	4.60	4.58
Miscellaneous	38	4.14	5.26	4.96	4.74
Manager Group		5.09	5.02	4.96	5.02

Table E-8 Means of appearance judgments for each sorting category and audience group

Sorting Category and Group		Judge Set			
	Code	Q	EP	T	Grand
Teacher					
General	01	4.95	4.54	5.00	4.83
Soil	02	4.61	4.23	4.73	4.52
Water	03	4.47	4.59	4.84	4.63
Minerals	04	6.32	5.42	5.62	5.79
Plants	05	5.59	5.12	5.42	5.38
Animals	06	5.19	4.87	5.22	5.09
Recreation	07	5.33	4.70	5.08	5.03
Miscellaneous	08	4.87	4.71	5.01	4.86
Teacher Group		5.05	4.70	5.07	4.94
Student					
General	11	5.04	4.89	5.31	5.08
Soil	12	5.15	4.84	4.39	4.79
Water	13	5.39	4.83	5.04	5.09
Minerals	14	5.47	5.23	5.27	5.33
Plants	15	5.02	4.94	5.18	5.05
Animals	16	5.41	4.77	5.58	5.25
Recreation	17	4.40	4.61	4.38	4.46
Miscellaneous	18	5.25	5.00	5.11	5.12
Student Group		5.19	4.89	5.20	5.09
Public					
General	21	5.03	4.76	5.07	4.95
Soil	22	5.13	4.70	5.25	5.06
Water	23	5.05	4.89	5.06	5.01
Minerals	24	4.72	4.83	4.90	4.82
Plants	25	5.26	4.54	5.01	4.94
Animals	26	4.99	4.55	4.85	4.81
Recreation	27	5.14	4.42	4.98	4.87
Miscellaneous	28	4.82	4.85	5.24	5.00
Public Group		5.05	4.62	5.01	4.91
Managers					
General	31	4.77	4.58	4.94	4.76
Soil	32	4.83	4.46	5.45	5.06
Water	33	4.90	4.30	5.25	4.96
Minerals	34	4.19	4.11	5.00	4.57
Plants	35	5.24	4.68	5.46	5.25
Animals	36	3.83	3.89	4.99	4.40
Recreation	37	4.98	4.10	5.06	4.88
Miscellaneous	38	4.55	4.47	5.12	4.81
Managers Group		4.70	4.38	5.19	4.86

Table E-9 Correlations matrix for all sets of quality and appearance judgments by audience groups

			Value of *r* for each factor, at 5% level							
Judge Set	Code	Sub Group	A_Q	A_E	A_T	A_{Gr}	Q_Q	Q_E	Q_T	Q_{Gr}
Appearance by Quality Judges	A_Q	Tea	1.00	0.80	0.74	0.94	0.48	0.60	0.57	0.65
		Stu	1.00	0.80	0.67	0.93	0.48	0.53	0.47	0.60
		Pub	1.00	0.69	0.62	0.90	0.34	0.37	0.34	0.43
		Mgr	1.00	0.78	0.64	0.92	0.36	0.28	0.34	0.39
by Educational-Potential Judges	A_E	T		1.00	0.75	0.92	0.38	0.70	0.59	0.63
		S		1.00	0.67	0.92	0.42	0.65	0.41	0.59
		P		1.00	0.67	0.87	0.33	0.38	0.38	0.50
		M		1.00	0.55	0.81	0.28	0.39	0.24	0.38
by Teacher Judges	A_T	T			1.00	0.87	0.41	0.60	0.71	0.65
		S			1.00	0.85	0.43	0.49	0.71	0.63
		P			1.00	0.87	0.35	0.50	0.58	0.56
		M			1.00	0.88	0.34	0.32	0.44	0.49
Mean Appearance Judgment	A_{Gr}	T				1.00	0.46	0.69	0.67	0.70
		S				1.00	0.50	0.62	0.58	0.62
		P				1.00	0.39	0.53	0.49	0.56
		M				1.00	0.39	0.37	0.39	0.52
Quality by Quality Judges	Q_Q	T					1.00	0.42	0.43	0.88
		S					1.00	0.47	0.48	0.88
		P					1.00	0.49	0.50	0.88
		M					1.00	0.53	0.27	0.87
by Educational-Potential Judges	Q_E	T						1.00	0.60	0.75
		S						1.00	0.50	0.77
		P						1.00	0.52	0.76
		M						1.00	0.24	0.67
by Teachers	Q_T	T							1.00	0.74
		S							1.00	0.75
		P							1.00	0.78
		M							1.00	0.64
Mean Quality Judgment	Q_{Gr}	T								1.00
		S								1.00
		P								1.00
		M								1.00

Table E-10 Regression coefficients for stepwise linear regression for quality concensus, mean quality as dependent variable

Independent Factors Selected	Group	Regression Coefficient	Standard Error Estimate
First step, all values at full strength			
Q_Q	T	0.88	6.51
Q_Q	S	0.88	0.46
Q_Q	P	0.88	0.47
Q_Q	M	0.87	0.39
Second step, all values full			
$Q_Q + Q_E$	T	0.97	0.25
$Q_Q + Q_E$	S	0.97	0.24
$Q_Q + Q_E$	P	0.96	0.26
$Q_Q + Q_T$	M	0.97	0.20
First step, Quality factors set to zero			
A_{Gr}	T	0.70	0.77
A_{Gr}	S	0.68	0.72
A_{Gr}	P	0.56	0.81
A_{Gr}	M	0.52	0.69
Second step, Quality factors set to zero			
$A_{Gr} + A_T$	T	0.70	0.77
$A_{Gr} + A_T$	S	0.68	0.71
$A_{Gr} + A_Q$	P	0.59	0.80
$A_{Gr} + A_T$	M	0.53	0.67
Third step, quality factors set to zero			
$A_{Gr} + A_T + A_Q$	T	0.70	0.77
$A_{Gr} + A_T + A_Q$	S	0.68	0.71
$A_{Gr} + A_Q + A_E$	P	0.59	0.80
$A_{Gr} + A_T + A_E$	M	0.53	0.68

List E-11 Holarith selection of outstanding pieces by weighted quality judgment

Teacher Material
Mean = 4.69 SD = 1.07 Mean + 1 1/2 SD = 6.30

010148	Conservation	6.58
010234	Penn. Tchg. Guide to Nat. Res. Cons.	6.54
010088	Guide to Tchg. Cons. in Ohio Elem.Schs.	6.53
010120	Soil and Water Cons. Activity	6.38
050039	For Lab and Field Manual	6.37
050054	Forestry for Minnesota Schools	6.34
080216	Little Climates	6.32
040009	Earth Science	6.31
080048	Teaching Population Dynamics	6.29
050015	Forestry Principles for Elem. Schools	6.26
050027	Ferns and Their Allies	6.23
010087	Dev. of Basic Concepts	6.17
040021	The Chemistry Iron	6.15

Student Material
Mean = 4.63 SD = 0.97 Mean + 1 1/2 SD = 6.08

150162	Forestry for 4-H'ers	6.72
140042	Ancient Sea Life	6.50
160153	Bobby Bluegill	6.40
160025	Facts Fancies and Folklore	6.32
120001	Citizens of the Soil	6.29
170004	Junior Boatman's Safety Course	6.26
170001	Outdoor Cookery	6.26
110049	4-H Clubs Cons. Workbook	6.24
140036	Common Rocks and Min. of Penn.	6.24
180102	Marie Curie	6.22
180066	National Geographic School Bulletin	6.22
150153	Plants Without Flowers	6.22

Public Materials
Mean = 4.65 SD = 0.98 Mean + 1 1/2 SD = 6.11

230204	Hoover Dam	6.84
250060	Mich. Trees Worth Knowing	6.62
210128	Land for Americans	6.52
250492	Planting Trees for Farmstead Shelter	6.52
230287	Planting and Irrigating on Contour	6.51
280012	The Conservation Volunteer	6.48
250654	Your Fabulous Friend	6.47
280444	Sea Frontiers	6.38
270636	Land and Water for Recreation	6.36
220132	Have Your Soil Tested	6.36
220162	Miniature Soil Monoliths	6.35
260414	Oregon's Elk	6.34
220066	Farming N. Cent. Wisc. Soils	6.33
260780	Age and Growth of the Fishes	6.33
260906	This is Alice Frontalis	6.31
230276	Management of Western Arid Lands	6.30
260330	Ohio's Wildlife Resources	6.30
220012	Soil Conservation at Home	6.30

List E-11 (Continued)

280030	Pure Air for Pennsylvania	6.28
210258	Natural Resources of West Virginia	6.27
210252	Natural Resources of Montana	6.27
230028	What Water Means to Ohio	6.27
280258	New York State Conservationist	6.25
230078	Guide to Stream Improvement	6.23
230291	Sewage Disposal for Rural Homes	6.23
240078	The Night the Earth Shook	6.23
240102	King Coal Comes Back	6.23
240120	The Story of Oil	6.23

Managers Material
Mean = S.02 SD = .79 Mean + 1-1/2 SD = 6.21

380048	Consumer Guide to USDA Service	6.44
350054	Forest Trees to Plant in Pennsylvania	6.35
330210	Water Mgt, Agriculture and Ground Water	6.33
320012	Effects ... Seedling Establishment	6.31
330006	Water Cons. from Mountains to Desert	6.30
330252	Water Quality Management	6.30
340300	Silver	6.30
350102	*Pinus Strobus L.*	6.30
350402	Progressive Private Forestry	6.30
350342	Protecting Forest From Fire	6.28
330144	Stream Gaging Station for Resources	6.26
350306	Red Alder	6.26
350372	Timber, Water and Stamp Creek	6.25
350378	Processing and Marketing Complex	6.25
330138	Apparatus for Forming Waterways	6.22

Table E-12 Quality and appearance ratings for the 102 titles which 2/3 or all of teacher judges would use

		Quality Rating		Appearance Rating	
Serial No.	Producer[1]	Q_{Gr}[2]	Decile[3]	A_{Gr}[2]	Decile[3]
010012	A142	4.33	7	5.26	5
45	A323	5.88	2	5.43	5
69	A236	4.33	7	6.17	2
153	D67	5.51	3	5.65	4
251	G34	5.95	1	4.27	7
254	I25	4.78	6	5.23	5
030015	C37	5.25	4	6.61	1
24	C12	5.51	3	6.61	1
040012	K126	5.11	5	6.20	2
18	K126	5.88	2	6.44	1
050003	C5	4.00	8	4.07	8
42	C5	6.08	1	6.78	1
45	C5	5.16	4	6.78	1
48	D73	5.92	2	6.30	2
60	K4	5.36	4	6.55	1
060036	G34	5.33	4	6.76	1
081	C22	4.92	5	6.12	2
141	K136	5.13	2	6.36	2
144	K143	5.91	2	6.84	1
19 Teacher titles (8.6 percent of material tested)					
110010	B75	3.83	8	4.71	7
28	C1	5.63	2	4.88	7
96	A540	5.85	2	6.83	1
108	C3	3.81	8	4.48	7
111	C3	3.60	9	4.69	7
114	C3	3.60	9	4.22	8
117	C3	3.52	9	3.88	9
120	C3	3.60	9	4.22	8
120033	A476	5.46	2	6.12	3
130011	A173	5.20	4	5.44	5
23	C21	5.64	2	6.56	1
140001	K115	5.44	2	6.31	2
30	A304	4.25	7	6.74	1
39	A329	4.03	8	5.20	6
150051	C5	3.78	8	4.11	8

[1] See Appendix B to identify producer

[2] Grand quality rating and grand appearance rating is the mean or concensus rating developed with nine judges

[3] Rank of the rating indicated by decile from 1 (high) to 10 (low).

Table E-12 (Continued)

		Quality Rating		Appearance Rating	
Serial No.	Producer[1]	Q_{Gr}[2]	Decile[3]	A_{Gr}[2]	Decile[3]
127	C6	4.58	6	6.42	2
138	B75	3.47	9	3.00	10
192	C5	3.72	9	3.73	9
201	A121	5.28	3	5.22	6
160001	A3	5.11	4	5.82	4
4	A3	5.08	4	5.61	4
7	A3	4.88	5	6.38	2
10	A3	4.16	7	4.90	7
13	A3	5.34	3	5.61	4
36	A297	5.39	3	6.32	2
220	A504	3.81	8	3.71	9
170009	B133	3.05	10	3.81	9
180066	D268	6.21	1	6.94	1
78	L309	3.80	8	6.17	3
81	L309	4.05	8	6.17	3
30 Student titles (10.3 percent of material tested)					
220036	C6	5.69	2	6.13	2
43	C6	5.81	2	4.78	6
78	A274	5.58	2	6.08	2
90	A465	5.72	2	6.68	1
210	C5	4.16	7	2.91	10
230024	A282	5.03	4	6.39	2
60	C1	5.62	2	4.48	7
84	A328	3.32	9	4.86	6
276	C37	6.30	1	7.01	1
240060	L308	4.41	7	4.79	6
102	K115	6.23	1	5.03	5
108	K115	5.26	3	5.90	3
120	L320	6.23	1	6.92	1
126	L881	5.62	2	6.92	1
250060	A189	6.62	1	7.55	1
102	A396	5.24	4	6.09	2
168	C5	6.09	1	6.44	1
345	A269	4.45	6	4.34	7
390	A269	4.09	7	6.26	2
444	A425	6.20	1	5.74	3
450	A425	2.60	10	3.68	9
504	A481	4.33	7	5.96	3
594	C5	3.85	8	3.84	9
624	C5	3.59	9	3.38	10
696	B270	5.03	4	5.26	4
260118	A116	3.81	8	3.86	9
228	A215	5.82	2	6.33	2
258	A269	5.00	4	5.73	3
540	A501	6.16	1	5.82	3

Table E-12 (Continued)

		Quality Rating		Appearance Rating	
Serial No.	Producer[1]	Q_{Gr}[2]	Decile[3]	A_{Gr}[2]	Decile[3]
630	A189	6.08	1	6.31	2
666	A269	6.04	1	4.90	6
732	A269	4.77	5	4.31	7
750	A269	4.78	5	6.35	2
774	A269	5.22	4	5.21	5
966	D73	5.42	3	5.32	4
978	A269	6.12	1	4.70	6
270006	A116	3.65	9	2.80	10
312	A297	5.94	1	6.39	2
330	A307	5.44	3	6.36	2
456	C50	5.58	2	6.93	1
582	C51	5.42	3	5.16	5
900	L1021	4.23	7	5.35	4
930	B250	3.74	9	6.19	2
960	C5	4.62	6	5.08	5
972	C5	5.20	4	6.28	2
984	C5	5.86	2	5.42	4
1008	C30	3.94	8	5,36	4
1014	C30	5.24	4	5.68	3
1026	L825	6.18	1	6.42	1
280030	A328	6.28	1	7.16	1

50 Public titles (76.8 percent of materials tested)

310114	C6	5.15	5	5.72	3
330006	A20	6.30	1	5.70	3
350006	A44	4.25	9	5.49	4

3 Manager titles (1.0 percent of materials tested)

102 Total selections (6.6 percent of tested sample).

APPENDIX F

SAMPLE QUESTIONNAIRES, RESULTS FROM TEACHER AWARENESS TESTING

Page

F-1 Maps F-2

F-2 Tables 1-11

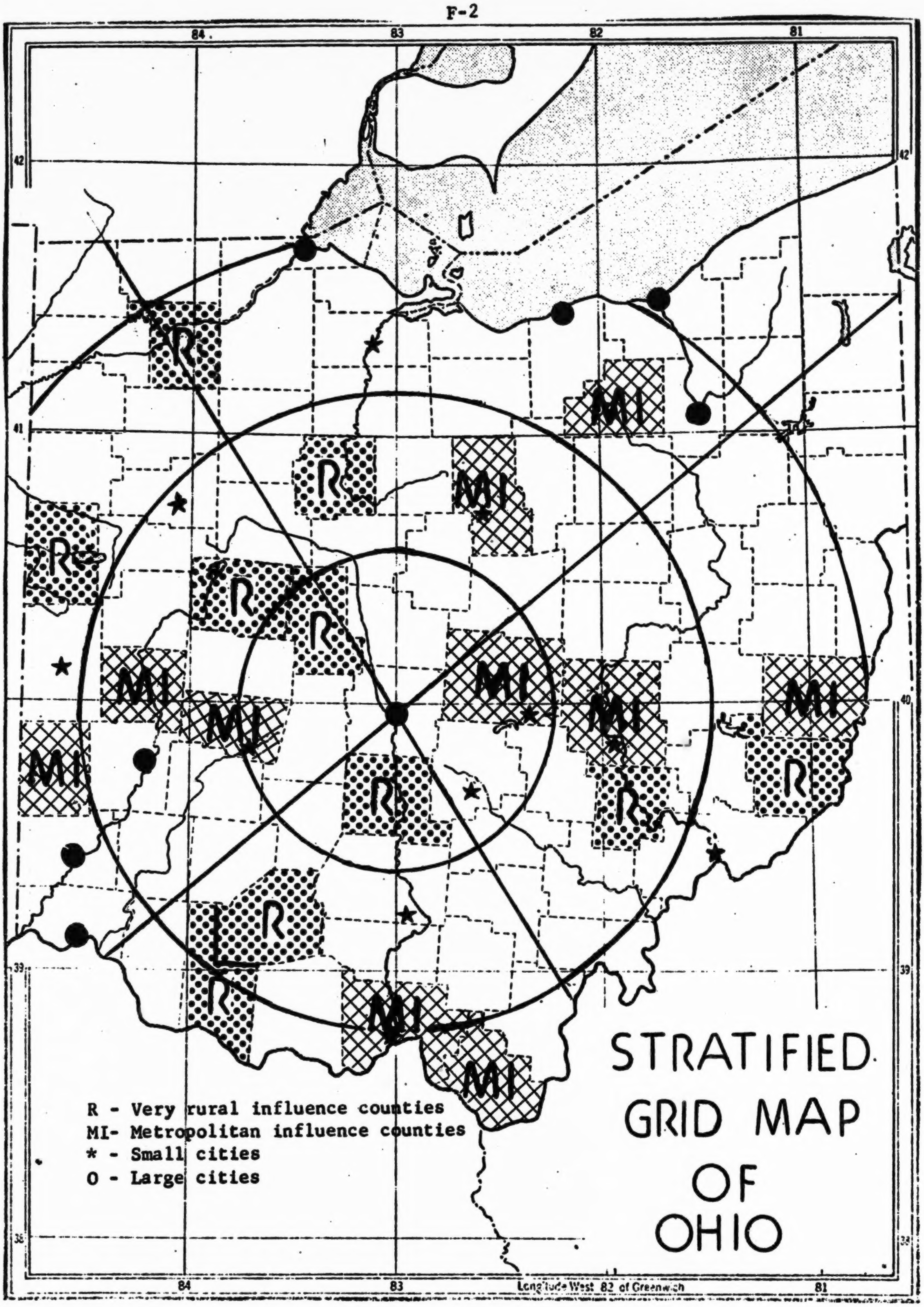
- Table 1 Population of cities in sample F-5
- Table 2 Comparison of state and sample schools, allocated questionnaires F-6
- Table 3 Proportions for elementary and secondary schools F-7
- Table 4 Ohio questionnaire allocation F-7
- Table 5 Calculation of teacher/school for Ohio area F-8
- Table 6 Calculation of teacher/school for Minnesota area F-9
- Table 7 Calculation of teacher/school for Missouri area F-10
- Table 8 Calculation of the number of schools per category F-11
- Table 9 Actual vs. calculated portions F-12
- Table 10 Actual number of questionnaires sent F-12
- Table 11 Responses to teacher awareness test F-13

F-3 List of schools in sample F-14

F-4 Teacher awareness questionnaire

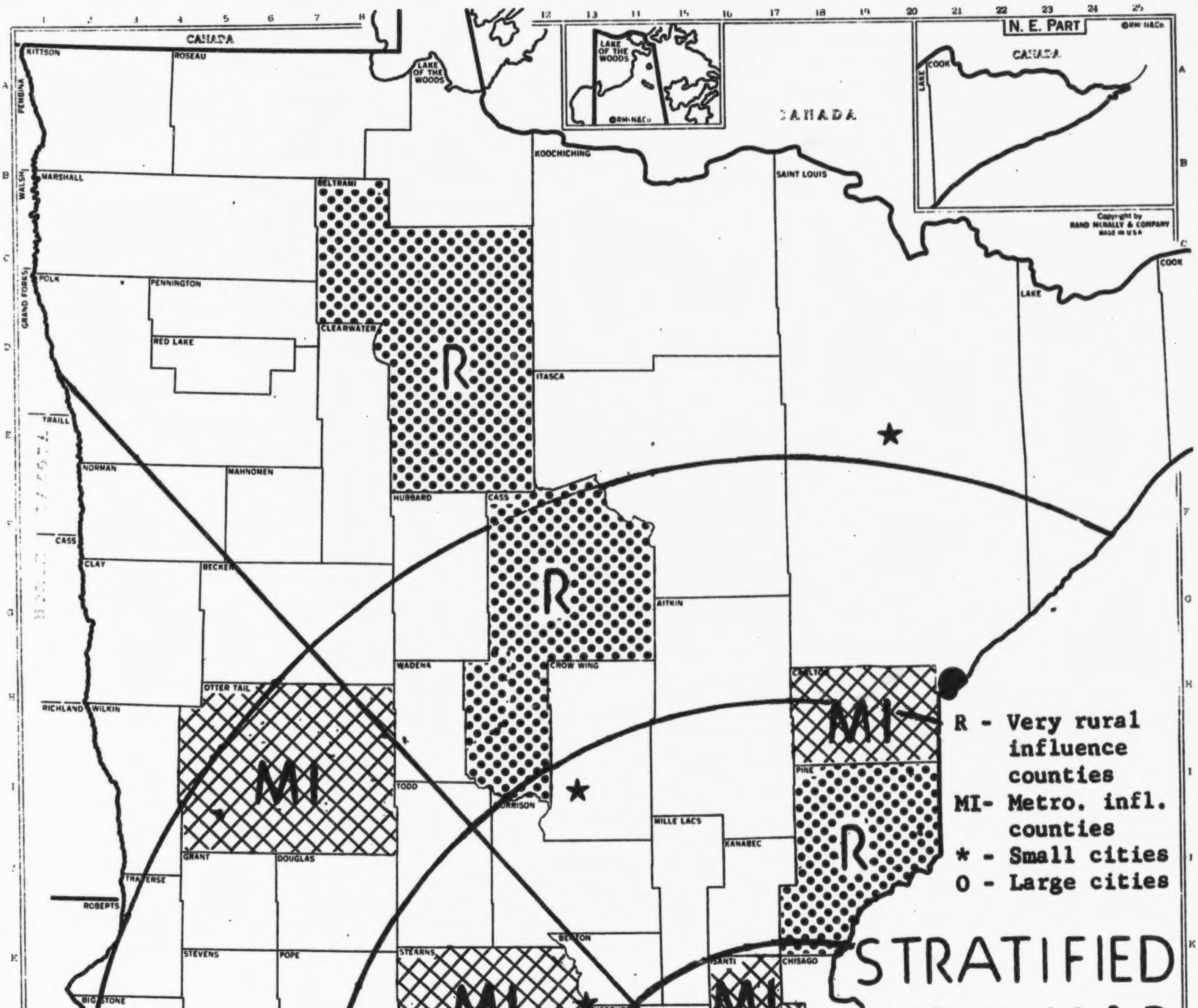
- Part I F-37
- Part II F-43

F-5 Principal questionnaire F-52


84
83
82
81
42
41
40
39
38
R
MI
Longitude West 82 of Greenwich

STRATIFIED GRID MAP OF OHIO

R - Very rural influence counties
MI- Metropolitan influence counties
* - Small cities
O - Large cities



STRATIFIED GRID MAP OF MINNESOTA

R - Very rural influence counties
MI- Metro. infl. counties
* - Small cities
O - Large cities

CANADA
N. E. PART
LAKE OF THE WOODS
SOUTH DAKOTA
IOWA
KITTSON
ROSEAU
MARSHALL
PENNINGTON
POLK
RED LAKE
BELTRAMI
CLEARWATER
KOOCHICHING
SAINT LOUIS
LAKE
COOK
ITASCA
NORMAN
MAHNOMEN
HUBBARD
CASS
CLAY
BECKER
AITKIN
WADENA
CROW WING
OTTER TAIL
WILKIN
RICHLAND
CARLTON
PINE
TODD
MORRISON
MILLE LACS
KANABEC
GRANT
DOUGLAS
TRAVERSE
ROBERTS
STEVENS
POPE
STEARNS
BENTON
ISANTI
CHISAGO
BIG STONE
SHERBURNE
ANOKA
SWIFT
KANDIYOHI
MEEKER
WRIGHT
WASHINGTON
LAC QUI PARLE
CHIPPEWA
HENNEPIN
RAMSEY
DEUEL
MCLEOD
CARVER
RENVILLE
YELLOW MEDICINE
SCOTT
LINCOLN
LYON
REDWOOD
SIBLEY
GOODHUE
BROOKINGS
BROWN
NICOLLET
LE SUEUR
RICE
WABASHA
MOODY
PIPESTONE
MURRAY
COTTONWOOD
BLUE EARTH
WASECA
STEELE
DODGE
OLMSTED
WINONA
WATONWAN
MINNEHAHA
ROCK
NOBLES
JACKSON
MARTIN
FARIBAULT
FREEBORN
MOWER
FILLMORE
HOUSTON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
VERNON
R
MI
Copyright by RAND McNALLY & COMPANY MADE IN U.S.A.

STRATIFIED GRID MAP OF MISSOURI

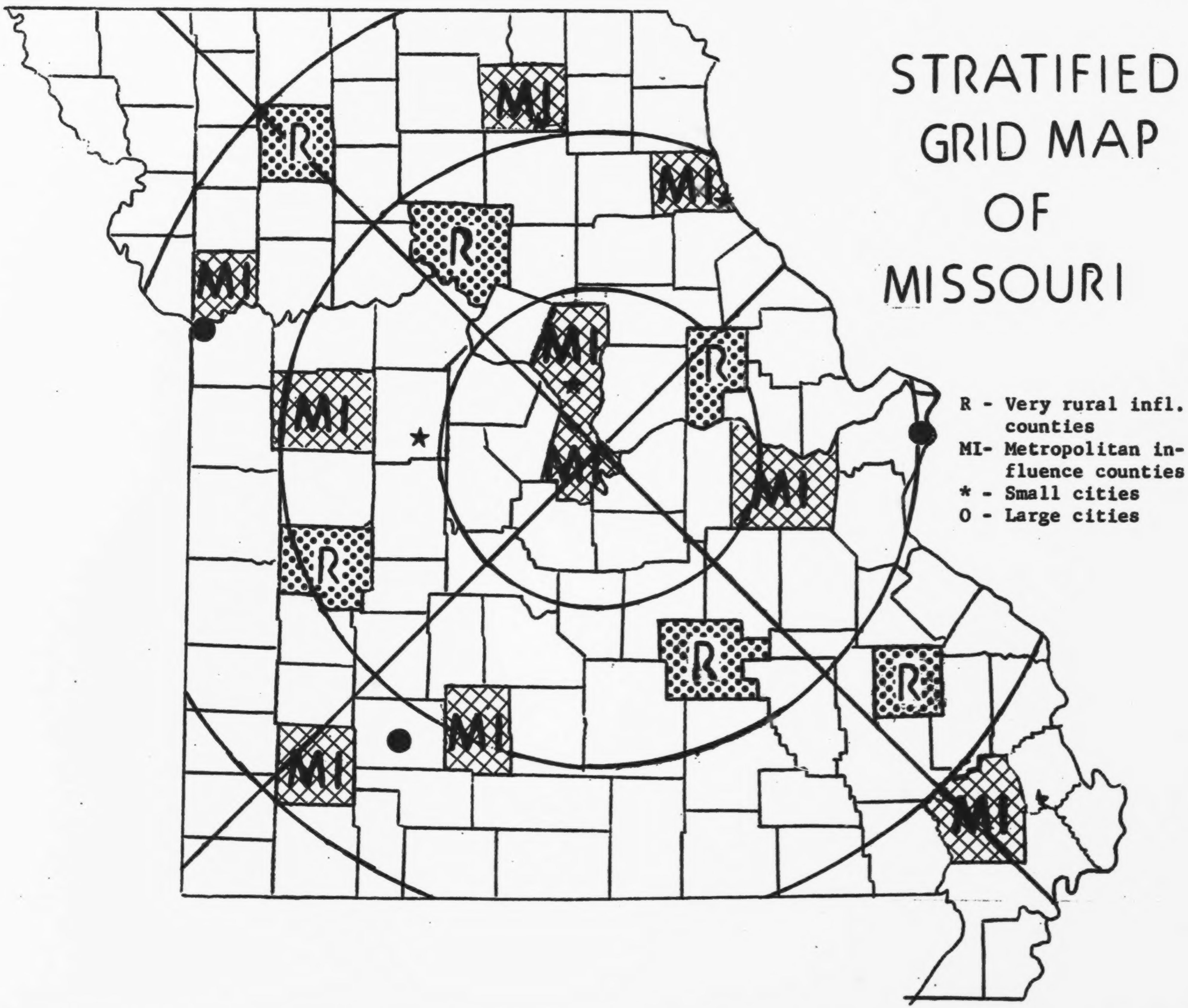

R - Very rural infl. counties
MI- Metropolitan influence counties
* - Small cities
O - Large cities
R
MI

Table 1 Population of cities in sample (in thousands)

Small Cities	Population	Large Cities	Population
Ohio			
Springfield	83	Cleveland	876
Mansfield	47	Columbus	376
Fremont	18	Cincinnati	503
Lima	51	Dayton	262
Greenville	11	Toledo	318
Lancaster	30	Akron	290
Chillicothe	25	Hamilton	72
Portsmouth	37	Lorain	69
Zanesville	39		
Marietta	17		
Minnesota			
Brainerd	13	Duluth	107
Fergus Falls	14	Minneapolis	483
Mankato	24	St. Paul	313
Rochester	41		
St. Cloud	34		
Virginia	14		
Missouri			
Columbia	37	Kansas City	476
Hannibal	20	Springfield	96
Kirksville	13	St. Louis	750
Sedalia	24		
Jefferson City	28		
Sikeston	14		

Table 2 Comparison of state and sample schools, allocated and actual divisions of questionnaires

A Comparison of Initial and Actual Div. of Questionnaires							B Comparison of Schools*					
	Total Question. Allocated	Initial Division of Question.		Actual Division of Question.		Actual Ratio E-S	Total Schs. in State		State E-S School	Total Schools in Sample Areas		Sample Area E-S School
State	For ea. State	Elem.	Sec.	Elem.	Sec.	Question.	Elem*	Sec.	Ratio	Elem.	Sec.	Ratio
Ohio	1800	1350	450	1403	535	2.62:1	3112	1072	3:1	908	297	3:1
Minn.	800	528	272	565	230	2.46:1	2000	704	2.8:1	316	165	1.94:1
Mo.	900	657	243	625	289	2.2:1	1268	433	2.5:1	400	146	2.7:1

* Graded elementary schools only.

Table 3 Proportions for elementary and secondary schools

Category	Ohio				Minn.				Mo.			
	Elem.		Sec.		Elem.		Sec.		Elem.		Sec.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Rural	98	11	42	14	34	11.2	29	18	25	6.25	25	17
Metro. Infl.	185	20	79	27	68	22.4	65	40.4	82	20.5	68	46.6
Small City	113	13	35	12	45	14.9	15	9.3	37	9.25	14	9.6
Large City	512	56	141	47	156	51.5	52	30.3	256	64	39	26.8

Table 4 Ohio Questionnaire Allocation

School Category Elementary		Questionnaires Allocated for Each Category
Rural	- 11% X 1350	- 148
Metro. Infl.	- 20% X 1350	- 270
Small City	- 13% X 1350	- 176
Large City	- 56% X 1350	- 756
Secondary		
Rural	- 14% X 450	- 63
Metro. Infl.	- 27% X 450	- 122
Small City	- 12% X 450	- 54
Large City	- 47% X 450	- 211

Table 5 Calculation of Teachers/School for Ohio Sample Area

		Teachers/School
Rural Counties		
Elementary teachers -	866	9
Elementary schools -	98	
Secondary teachers -	569	13
Secondary schools -	42	
Metropolitan Influence Counties		
Elementary teachers -	2337	13
Elementary schools -	185	
Secondary teachers -	1502	19
Secondary schools -	79	
Small Cities		
Elementary teachers -	1694	15
Elementary schools -	113	
Secondary teachers -	1517	43
Secondary schools -	35	
Large Cities		
Elementary teachers -	10958	21
Elementary schools -	512	
Secondary teachers -	7495	53
Secondary schools -	141	

Table 6 Calculation of Teachers/School for Minnesota Sample Area

	Teachers/School
Rural Counties	
Elementary teachers - 326	10
Elementary schools - 34	
Secondary teachers - 547	19
Secondary schools - 29	
Metropolitan Influence Counties	
Elementary teachers - 1049	13
Elementary schools - 81	
Secondary teachers - 1469	21
Secondary schools - 69	
Small Cities	
Elementary teachers - 646	14
Elementary schools - 45	
Secondary teachers - 860	57
Secondary schools - 15	
Large Cities	
Elementary teachers - 2452	16
Elementary schools - 156	
Secondary teachers - 2763	53
Secondary schools - 52	

Table 7 Calculation of teachers/school for Missouri Sample Area

		Teachers/School
Rural Counties		
Elementary teachers -	268	11
Elementary schools -	25	
Secondary teachers -	278	11
Secondary schools -	25	
Metropolitan Influence Counties		
Elementary teachers -	885	11
Elementary schools -	82	
Secondary teachers -	969	14
Secondary schools -	68	
Small Cities		
Elementary teachers -	574	16
Elementary schools -	37	
Secondary teachers -	634	45
Secondary schools -	14	
Large Cities		
Elementary teachers -	4857	19
Elementary schools -	256	
Secondary teachers -	2581	66
Secondary schools -	39	

Table 8 Calculation of the number of schools in each category

Ohio	Questionnaires Allocated[1]		Teachers/School		Schools
Elementary					
Rural	148	Divided by	9	=	16
Metro. Infl.	270	"	13	=	21
Small Cities	176	"	15	=	12
Large Cities	756	"	21	=	36
	1350				
Secondary					
Rural	54	"	3[2]	=	18
Metro. Infl.	63	"	4[1]	=	16
Small Cities	90	"	9[1]	=	10
Large Cities	243	"	11[1]	=	22
	450				

---

[1] Questionnaires allocated to secondary schools adjusted as follows in order to select at least one school in each segment in each category

	Original %	Adjusted %
Rural	14%	12%
Metro. Infl.	27%	14%
Small Cities	12%	20%
Large Cities	47%	54%
	100%	100%

[2] 20% of secondary teachers/school (science and social studies teachers only) Modifications were necessary in order to get a meaningful sample. Lists of teachers and the subjects they taught were not readily available so an approximation of science and social studies teachers was made using the Missouri school directory as a guide. It was calculated that about 20% of all the secondary teachers teach science and social studies related subjects.

Table 9 Actual vs. calculated proportions

Ohio	Calculated	Actual
Elementary		
Rural	11%	10.2%
Metropolitan Influence Counties	20	19.3
Small Cities	13	14.3
Large Cities	56	56.2
Secondary		
Rural	12%	9.5%
Metropolitan Influence Counties	14	11.6
Small Cities	20	16.3
Large Cities	54	62.6

Table 10 Actual number of questionnaires sent

	Schools					Teachers (Questionnaires)				
	Ele.	%	Sec.	%	Total	Ele.	%	Sec.*	%	Total
Ohio										
Rural	17	20.2	14	26.9	31	143	10.2	51	9.5	194
Metro. I.	20	23.8	14	26.9	34	272	19.3	62	11.6	334
Small C.	12	14.3	7	13.5	19	201	14.3	87	16.3	288
Large C.	35	41.7	17	32.7	52	787	56.2	335	62.6	1122
	84	100.0%	52	100.0%	136	1403	100.0%	535	100.0%	1938
Minnesota										
Rural	5	12.5	5	18.6	10	37	6.6	20	8.7	57
Metro. I.	9	22.5	8	29.6	17	130	23.0	40	17.4	170
Small C.	7	17.5	6	22.2	13	105	18.6	83	36.1	188
Large C.	19	47.5	8	29.6	27	293	51.8	87	37.8	380
	40	100.0%	27	100.0%	67	565	100.0%	230	100.0%	795
Missouri										
Rural	6	16	7	20	13	97	15.5	44	15.2	141
Metro. I	10	27	13	38	23	177	28.3	84	29.1	261
Small C.	8	22	8	24	16	123	19.7	91	31.5	214
Large C.	13	35	6	18	19	228	36.5	70	24.2	298
	37	100.0%	34	100.0%	71	625	100.0%	289	100.0%	914
Grand Total	161		113		274	2593		1054		3647

* Science and social studies teachers only.

Table 11 Responses to teacher-awareness test

School Group	Response Record Questionnaire Sent	Received	Percent Response
Ohio-Elementary			
Rural Counties	143	38	27
Metropolitan Counties	272	96	28
Small Cities	201	104	52
Large Cities	787	267	34
Ohio-Secondary			
Rural Counties	51	15	29
Metropolitan Counties	62	13	21
Small Cities	87	12	14
Large Cities	335	111	33
Ohio Total	1938	656	34
Minnesota-Elementary			
Rural Counties	37	13	35
Metropolitan Counties	130	45	35
Small Cities	105	56	53
Large Cities	293	122	42
Minnesota-Secondary			
Rural Counties	20	14	70
Metropolitan Counties	40	13	33
Small Cities	83	54	65
Large Cities	87	27	31
Minnesota Total	795	344	43
Missouri-Elementary			
Rural Counties	97	20	21
Metropolitan Counties	177	44	25
Small Cities	123	28	23
Large Cities	228	62	27
Missouri-Secondary			
Rural Counties	44	4	9
Metropolitan Counties	84	3	4
Small Cities	91	20	22
Large Cities	70	22	31
Missouri Total	914	203	22

OHIO ELEMENTARY SCHOOLS IN RURAL COUNTIES

School and City	Questionnaire Returned	
	Yes	No
Union Center Elementary School	X	
McCutchenville Elementary School	X	
Liberty Center Elementary School	X	
Belle Center Elementary School		X
Middleburg Elementary School		X
St. John Elementary School Maria Stein		X
St. Henry Elementary School		X
Washington Elementary School Circleville	X	
Monroe Elementary School Mount Sterling	X	
Whiteoak Elementary School Mowrystown	X	
Eagle Elementary School Sardinia	X	
Green-Sterling Elementary School Mt. Orab	X	
Bristol Elementary School McConnelsville	X	
McConnelsville Elementary School	X	
Bethel Elementary School Sycamore Valley	X	
Hannibal Elementary School		X
Washington Elementary School Alledonia	X	

38 out of 143 returned = 27% return

OHIO ELEMENTARY SCHOOLS IN METROPOLITAN INFLUENCE COUNTIES

School and City	Questionnaire Returned	
	Yes	No
Oak Grove Elementary School Springfield	X	
Northridge Elementary School Springfield	X	
Bellville Elementary School Bellville		X
East Mansfield Elementary School Mansfield	X	
Spencer Elementary School Spencer	X	
Chatham Elementary School Spencer		X
Fletcher Elementary School Fletcher		X
Camden Elementary School Camden		X
Franklin Elementary School Newark		X
McKean Elementary School Granville		X
Kirkersville Elementary School Kirkersville	X	
Madison Elementary School Minford		X
Glendale Elementary School Lucasville		X
Wheelersburg Elementary School Wheelersburg	X	
Decatur Elementary School Pedro		X
South Point Elementary School South Point		X

School and City	Yes	No
New Concord Elementary School New Concord		X
Nashport Elementary School Nashport	X	
Dillion Elementary School Zanesville	X	
Leona Avenue Elementary School Shadyside		X

96 out of 272 returned = 28% return

OHIO ELEMENTARY SCHOOLS IN SMALL CITIES

School and City	Questionnaire Returned Yes	 No
Grayhill Elementary School Springfield	X	
McKinley Elementary School Springfield		X
Carpenter Elementary School Mansfield	X	
Ranchwood Elementary School Mansfield	X	
Lutz Elementary School Fremont		X
Irving Elementary School Lima		X
East Elementary School Greenville	X	
South Elementary School Lancaster	X	
Tiffen Elementary School Chillicothe	X	
Scudder Elementary School Portsmouth	X	
Munson Elementary School Zanesville	X	
North Hills Elementary School Marietta	X	

104 out of 201 returned = 52%

OHIO ELEMENTARY SCHOOLS IN LARGE CITIES

School and City	Questionnaire Returned	
	Yes	No
Almira Elementary School Cleveland		X
Case Woodland Elementary School Cleveland	X	
Denison Elementary School Cleveland		X
Giddings Elementary School Cleveland		X
John Burroughs Elementary School Cleveland		X
Louisa May Alcott Elementary School Cleveland	X	
Moses Cleveland Elementary School Cleveland		X
Puritas Elementary School Cleveland		X
Tom L. Johnson Elementary School Cleveland	X	
Beatty Park Elementary School Columbus	X	
Clinton Elementary School Columbus	X	
Eastwood Elementary School Columbus		X
Gladstone Elementary School Columbus		X
Koebel Elementary School Columbus	X	
Michigan Avenue Elementary School Columbus	X	
Pinecrest Elementary School Columbus	X	

School and City	Yes	No
Stockbridge Elementary School Columbus	X	
Columbian Elementary School Cincinnati	X	
Hyde Park Elementary School Cincinnati		X
Mt. Washington Elementary School Cincinnati	X	
Schiel Elementary School Cincinnati		X
Edison Elementary School Dayton		X
Irving Elementary School Dayton	X	
Miami Chapel Elementary School Dayton	X	
Fulton Elementary School Toledo		X
Marshall Elementary School Toledo		X
Ella P. Stewart Elementary School Toledo	X	
Crouse Elementary School Akron		X
Highland Park Elementary School Akron		X
McEbright Elementary School Akron	X	
Pierce Elementary School Hamilton	X	
Larkmoor Elementary School Lorain		X

School and City	Yes	No
Brentnell Elementary School Columbus	X	
Kenwood Elementary School Columbus	X	
Westgate Elementary School Columbus		X

267 out of 787 returned = 34% return

OHIO SECONDARY SCHOOLS IN RURAL COUNTIES

School and City	Questionnaire Returned	
	Yes	No
Fairbanks Senior High School Milford Center	X	
Mohawk Senior High School Sycamore		X
Liberty Center High School Liberty Center		X
Malinta-Grelton High School Malinta		X
Rushsylvania Senior High School Rushsylvania		X
Riverside High School DeGraff	X	
Mendon-Union High School Mendon		X
St. Henry School St. Henry		X
Teays Valley Senior High School Ashville	X	
Lynchburg Senior High School Lynchburg		X
Hamersville Senior High School Hamersville		X
Malta-McConnelsville Senior High School McConnelsville		X
York Senior High School Crooksville	X	
Bealsville High School Bealsville		X

15 out of 51 returned = 29%

OHIO SECONDARY SCHOOLS IN METROPOLITAN INFLUENCE COUNTIES

School and City	Questionnaire Returned	
	Yes	No
Olive Branch Junior High School New Carlisle	X	
South Vienna Junior High School South Vienna		X
Crestview Senior High School Ashland		X
Lucas Senior High School Lucas		X
Center High School Brunswick		X
Bethel High School Tipp City	X	
Jackson High School Eaton		X
Johnstown-Monroe Senior High School Johnstown	X	
Licking Senior High School Newark	X	
Green High School Franklin Furnance		X
Fairland Senior High School Proctorville		X
John Glenn Senior High School New Concord		X
Frazesburg Senior High School Frazesburg		X
St. Clairsville Senior High School St. Clairsville	X	

13 out of 62 returned = 21%

OHIO SECONDARY SCHOOLS IN SMALL CITIES

School and City	Questionnaire Returned	
	Yes	No
Fremont Junior High School Fremont		X
Central Junior High School Lima		X
Greenville Senior High School Greenville	X	
Lancaster Senior High School Lancaster	X	
General Sherman Junior High School Lancaster	X	
Mt. Logan Junior High School Chillicothe	X	
Marietta High School Marietta		X

12 out of 87 = 14% return

OHIO SECONDARY SCHOOLS IN LARGE CITIES

School and City	Questionnaire Yes	Returned No
East Technical High School Cleveland		X
Albert Bushnell Hart Junior High School Cleveland	X	
Brookhaven High School Columbus	X	
Barrett Junior High School Columbus	X	
Aiken High School Cincinnati		X
Eastern Hills Junior High School Cincinnati	X	
Fairview High School Dayton	X	
E. D. Libbey High School Toledo	X	
Charles W. Eliot Junior High School Cleveland	X	
Hyre Junior High School Akron	X	
Harding Junior High School Hamilton	X	
Hawthorne School Lorain	X	
Buckeye Junior High School Columbus	X	
Dominion Junior High School Columbus	X	
Eastmoor Junior High School Columbus	X	
Mohawk Junior High School Columbus	X	
Westmoor Junior High School Columbus		X

111 out of 135 = 33% return

MINNESOTA VERY RURAL COUNTY ELEMENTARY AND SECONDARY SCHOOLS

School and City	Questionnaire Returned	
	Yes	No
Senior High School Willow River	X	
Willow River Elementary School Willow River	X	
Elementary School Kelliher	X	
Secondary School Kelliher	X	
Elementary School Franklin		X
Secondary School Franklin		X
Northside Elementary School Benson		X
Junior High School Benson	X	
Elementary School Adams	X	
Secondary School Adams	X	

27 out of 57 returned = 47% return

MINNESOTA METROPOLITAN COUNTY SCHOOLS

School and City	Questionnaire Returned	
	Yes	No
Grasston-Braham Elementary School Braham	X	
Secondary School Braham	X	
Elementary School Pine River	X	
Secondary School Pine River		X
South Terrace Elementary School Carlton	X	
Secondary School Carlton	X	
Elementary School Buhl		X
Secondary School Buhl	X	
Elementary School Garden City		X
Secondary School Garden City	X	
Elementary & Junior High School Sauk Center		X
Elementary School Montgomery		X
Secondary School Montgomery		X
Elementary School Battle Lake		X
Secondary School Battle Lake		X
Elementary School Dodge Center	X	
Secondary School Dodge Center		X

58 out of 170 returned = 34% return

MINNESOTA SMALL CITY SCHOOLS

School and City	Questionnaire Returned	
	Yes	No
McKinley Elementary School Fergus Falls	X	
Washington Junior High School Fergus Falls	X	
Roosevelt Elementary School Mankato	X	
Franklin Junior High School Mankato	X	
Edison Elementary School Rochester	X	
Northrop Elementary School Rochester	X	
Central Junior High School Rochester	X	
Lincoln Elementary School St. Cloud		X
South Junior High School St. Cloud	X	
Midway Elementary School Virginia	X	
Roosevelt Senior High School Virginia		X
Riverside Elementary School Brainerd		X
Franklin Junior High School Brainerd	X	

110 out of 188 returned = 59% return

MINNESOTA LARGE CITY SCHOOLS

School and City	Questionnaire Returned Yes	 No
Endion Elementary School Duluth		X
Kenwood Elementary School Duluth	X	
Merritt Elementary School Duluth	X	
Nettleson Elementary School Duluth	X	
West Junior High School Duluth		X
Stowe Junior High School Duluth	X	
Adams Elementary School Minneapolis		X
Cooper Elementary School Minneapolis		X
Greeley Elementary School Minneapolis	X	
Howe Elementary School Minneapolis	X	
Lowry Elementary School Minneapolis		X
Northrop Elementary School Minneapolis		X
Standish Elementary School Minneapolis	X	
Folwell Junior High School Minneapolis		X
Marshall High School Minneapolis		X
Ramsey Junior High School Minneapolis	X	

School and City	Yes	No
Adams Elementary School St. Paul		X
Douglas Elementary School St. Paul	X	
Frost Lake Elementary School St. Paul	X	
Harrison Elementary School St. Paul	X	
Linwood Elementary School St. Paul	X	
Mississippi Elementary School St. Paul		X
St. Anthony Park Elementary School St. Paul	X	
Webster Elementary School St. Paul		X
Mounds Park Junior High School St. Paul	X	
Humbolt High School St. Paul	X	
Ramsey Junior High School St. Paul		X

149 out of 380 returned = 39%

MISSOURI RURAL COUNTY SCHOOLS

School and City	Questionnaire Returned	
	Yes	No
Wellsville Elementary School Wellsville		X
Wesslville High School Wellsville	X	
Salisbury Elementary School Salisbury		X
High School Salisbury	X	
Elementary School Gallatin		X
High School Gallatin		X
Elementary School Osceola		X
High School Osceola		X
Elementary School Salem	X	
High School Salem		X
Junior High School Salem	X	
Elementary School Frederickton	X	
High School Fredericktown		X

24 out of 141 returned = 17%

MISSOURI METROPOLITAN COUNTY SCHOOLS

School and City	Questionnaire Returned	
	Yes	No
Elementary School Hallsville		X
High School Hallsville		X
Elementary School Russellville		X
Secondary School Russellville		X
Elementary School Palmyra	X	
Secondary School Palmyra	X	
Elementary School Novinger		X
Secondary School Novinger		X
Knob Noster Elementary School Knob Noster	X	
Senior High School Knob Noster	X	
Junior High School Knob Noster		X
Marshfield Elementary School Marshfield		X
High School Marshfield	X	
Elementary School Mt. Vernon		X
Secondary School Mt. Vernon		X

School and City	Yes	No
Central Elementary School Dexter	X	
Senior High School Dexter		X
Junior High School Dexter		X
Elementary School Smithville		X
High School Smithville		X
Elementary School Pacific	X	
Senior High School Pacific		X
Junior High School Pacific	X	

47 out of 261 returned = 18%

MISSOURI SMALL CITY SCHOOLS

School and City	Questionnaire Returned	
	Yes	No
West Elementary School Jefferson City		X
Freshman High School Jefferson City	X	
Simonsen Junior High School Jefferson City		X
Russell Elementary School Columbia	X	
Field Elementary School Columbia		X
Jefferson Junior High School Columbia	X	
Pettibone Elementary School Hannibal		X
Hannibal Junior High School Hannibal		X
Washington Elementary School Kirksville	X	
Kirksville Senior High School Kirksville		X
Ophella Parrish Junior High Kirksville	X	
Jefferson Elementary School Sedalia		X
Smith-Cotton Junior-Senior High School Sedalia		X
Elementary School Sikestown		X
Sikeston Middle School Sikeston	X	
East Elementary School Jefferson City	X	

48 out of 214 returned = 22% return

MISSOURI LARGE CITY SCHOOLS

School and City	Questionnaire Returned	
	Yes	No
Arlington & Branch Elementary School St. Louis	X	
Carr Elementary School St. Louis	X	
Cupples & Branch Elementary School St. Louis	X	
Field Elementary School St. Louis		X
Hempstead Elementary School St. Louis		X
Lixington Elementary School St. Louis	X	
Meramec Elementary School St. Louis		X
Shaw Elementary School St. Louis		X
Northwest High School St. Louis	X	
Central High School St. Louis	X	
Bannerker Elementary School Kansas City	X	
McCoy Elementary School Kansas City		X
West Junior High School Kansas City	X	
Lincoln Senior High Kansas City		X
Boyd Elementary School Springfield	X	
Mark Twain Elementary School Springfield		X

School and City	Yes	No
Sherwood Elementary School Springfield		X
Pershing Junior High School Springfield		X
Study Junior High School Springfield		X

84 out of 298 returned = 28% return

OHIO CONTROL SCHOOLS

School and City	Questionnaire Returned Yes	Questionnaire Returned No
North Lincoln Elementary School Alliance	X	
Melrose School Wooster	X	
Rockhill Elementary School Alliance	X	
Richville School Nowarre	X	

also: Ohio Conservation Laboratory Conference

Teacher-Awareness Questionnaire

Part I

Biographical Questions

This questionnaire is part of a survey to determine, in part, if and to what extent free and inexpensive printed materials concerned with natural resources can be made more available, attractive, readable, and more helpful.

INSTRUCTIONS

Part I (questions 1-28) Answer the information about yourself.

Part II - These are questions concerning the natural resource publications pictured in the upper-left-hand corner of each page.

Only if the publication is totally unfamiliar to you, should you proceed to the following page.

If the publication is fairly familiar to you, pick what you think best represents its content in statement number 2.

Please complete each page. Your cooperation is necessary for a successful survey.

You are not asked to identify yourself.

QUESTIONS

1. State your sex: ________male ________female.

2. In what type of community did you spend the major part of your youth?

   ___(1) farm or small village (up to 2,000 population)
   ___(2) small town (2,000 to 50,000 population)
   ___(3) small city (50,000 to 100,000 population)
   ___(4) large city (100,000 or more population)

3. In which state did you spend the major part of your youth?

   ____

4. In what type of school did you receive most of your elementary school education?

   A. ___(1) public
   ___(2) parochial
   ___(3) private

   B. In which state? ________________

5. In what type of school did you receive most of your secondary school education?

   A. ___(1) public
   ___(2) parochial
   ___(3) private

   B. In which state? ________________

6. At what type of college did you do most of your undergraduate work?

   A. ___(1) state university
   ___(2) state teachers' college or normal school
   ___(3) other public college or university
   ___(4) private university
   ___(5) private teachers' college or normal school
   ___(6) other private college

   B. In which state?__________________________________

7. In general, what was the quality of your work when you were in college?

___(1) graduated with honors
___(2) above average
___(3) average
___(4) somewhat below average

8. At what type of college did you do most of your graduate work?

A.___(1) I have not done graduate work
___(2) state university
___(3) state teachers' college
___(4) other public college or university
___(5) other private teachers' college or private university

B. In which state?____________________

9. The highest level of education you attained:

___(1) 1-2 years of college
___(2) 3-4 years of college
___(3) bachelor's degree
___(4) more than 8 semester hours (12 quarter hrs.) post graduate
___(5) master's degree
___(6) post master's degree
___(7) doctorate

10. How many years have you been teaching?

___(1) 1-5 years
___(2) 6-10 years
___(3) 11-20 years
___(4) 21+ years

11. Have you attended workshops, institutes, etc., within the last three years?
___yes ___no

12. Indicate the grade category(s) within which you are currently teaching:

___(1) primary (grades 1-3)
___(2) intermediate (4-6)
___(3) junior high (7-9)
___(4) senior high (10-12)

13. IF ELEMENTARY
Indicate the subject(s) you are currently teaching:

A. ___(1) general (all or nearly all subjects)

B. ___(1) special (check also area)
___(2) language arts
___(3) arithmetic
___(4) science
___(5) social studies
___(6) other (specify)________________________

14. IF SECONDARY
Indicate the subject(s) you are currently teaching:

___(1) history
___(2) geography
___(3) problems of democracy
___(4) general science
___(5) biology
___(6) chemistry
___(7) physics
___(8) other
____
____
____
____

15. Have you ever attended a conservation workshop or taken a general conservation course?

____yes ____no

16. Do you feel that teaching about natural resources is relevant in your particular classroom?

____yes ____no

17. What subject(s) have you taught but are no longer teaching?

IF ELEMENTARY

A. ___(1) general
___(2) special (specify)

____
____
____

IF SECONDARY

___(1) history
___(2) geography
___(3) problems of democracy
___(4) general science
___(5) biology
___(6) chemistry
___(7) physics
___(8) other (specify)

____
____

18. What do you look for when choosing natural resource material for teaching? (Check any applicable)

___(1) those which will supplement your subject matter
___(2) those which will supply additional subject matter
___(3) those which are addressed to teachers and/or pupils only
___(4) any that look helpful at all
___(5) none

19. Does your school have any conservation or natural resource-related clubs, activities, organization?

____yes ____no

20. If so, do you participate? ____yes ____no

21. Your biggest problem in obtaining natural resource material is:

___(1) cost of material
___(2) effort in obtaining material
___(3) awareness of existence of material
___(4) information about available material

22. Have you used natural resource publications in your classroom:
(1) during the past 4 school weeks ____yes ____no
(2) during the current school year ____yes ____no
(3) longer than 1 year ago ____yes ____no
(4) cannot recall____
(5) never____

23. The selection of natural resource publications for your subject(s) and grade level(s) is mostly: ____adequate
____inadequate

24. The quality of natural resource publications for your subject(s) and grade level(s) is for the most part:

very poor | poor | average | good | very good

25. The number of different natural resource publications that you personally have (count periodicals once):
___0-10 ___11-20 ___21-50 ___51-100 ___101+

26. The primary means by which you obtain these publications:
___send for your own ___supplied by the school

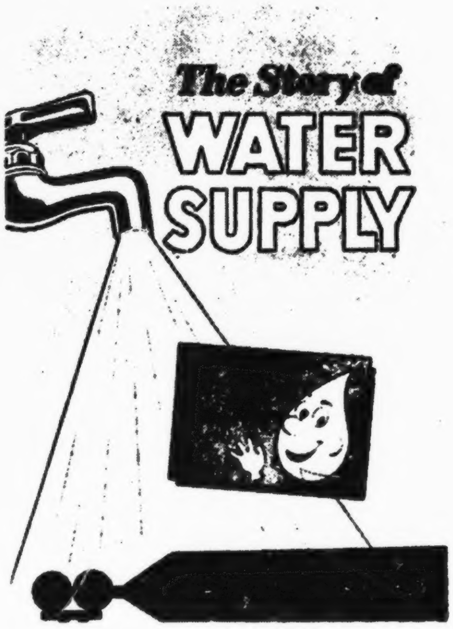
27. For these publications, indicate your principal source (party who composed, printed, and distributed material):
___(1) business (profit-oriented companies)
___(2) Federal Government agencies
___(3) non-profit organizations (Audubon Society, etc.)
___(4) state and local government agencies

28. Which of the following sources of publications do you use the least?
___(1) business
___(2) Federal Government agencies
___(3) non-profit organizations
___(4) state and local government agencies

Teacher-Awareness Questionnaire

Part II

Sample Page



1. The publication that this picture represents is:
___not at all familiar (proceed to next page)
___familiar, but not enough to recall its content (proceed to question 3)
___familiar enough to make a good guess as to what it is about (proceed to question 2)

2. This publication deals primarily with (check one):
___the growing problem of polution and polution abatement in the U.S.
___man's efforts to obtain safe water for human use - historically and today
___desaltation of sea water - water source of the future
___how water is used today

3. For your grade(s), the reading level of this publication is:
___too low
___moderately low
___acceptable
___moderately high
___too high
___publication not intended for students

4. I have used this publication (check all applicable):
___as a teacher source material
___as collateral reading material
___as a student reference material
___as text material
___for special projects
___seldom, if ever

5. I have used it in (check all applicable):
___reading and/or language arts
___social studies
___science
___other (specify) ___________________

6. In my school (check all applicable):
___I have a copy
___my students have a copy
___there is a copy on my room reference shelf
___the library has a copy
___I do not know of any copies

7. I became acquainted with this publication by:_____________
____

Identification of the Tested Publications Including the Choices Offered Under Question No. 2

National Publications

1. Conquest of the Land Through 7000 Years
Soil Conservation Service

This publication deals primarily with (check one)

_____man's discovery and exploration of the earth
_____the development of agricultural implements
_____land use and misuse since the beginning of
agriculture*
_____history of forest removal by man

2. The Forest Adventures of Mark Edwards
American Forest Products Industries, Inc.
_____the trip Mark and his father took through
the forest regions of the U.S.*
_____what a lost boy learned about the ways of
nature
_____Mark Edwards, boy forest ranger
_____the summer Mark spent at forestry camp

3. Help Keep Our Land Beautiful
Soil Conservation Society

_____America's national parks - their beauty and
value
_____pollution and pollution abatement
_____farming practices in the midwest
_____the importance of conservation practices*

4. Class Report - Coal
National Coal Association

_____the formation, mining, and important uses of
coal*
_____student projects on coal
_____new uses of coal in the United States
_____teacher outline for coal

5. The True Story of Smokey the Bear
Forest Service

_____Smokey's campaign against forest fires
_____the story of an orphaned cub who became
Smokey the Bear*
_____Smokey and his little uddy Sooty
_____how forest fires are detected and fought

*Correct answer

6. The Migration of Birds
Fish and Wildlife Service

_____black printing on salmon
_____green printing on white
_____black printing on white*
_____black printing on green

7. An Outline For Teaching Conservation
Soil Conservation Service

_____adult conservation education program
_____an outline for teaching a conservation course
_____teaching conservation in 4-H programs
_____integrating conservation into many of the regular subjects*

8. The Three R's and Resources
National Wildlife Federation

_____importance of conservation education*
_____organizing field trips for students
_____summer natural resource courses for teachers
_____conservation camps for children

9. The Story of Water Supply
American Water Works Association

_____the growing problems of pollution and pollution abatement in the United States
_____man's efforts to obtain safe water for human use - historically and today*
_____desaltation of sea water - water source of the future
_____how water is used today

10. It's a Tree Country
American Forest Products Industries, Inc.

_____the vast Northern Forest Region of Canada
_____forests in the United States - past and present*
_____the timberlands of the western United States
_____present trends in wood utilization in the United States

11. Conservation: A Discussion Portfolia
American Petroleum Institute

_____pictorial history of mineral resources in the U.S.
_____pictures and questions concerning several natural resources*
_____the conservation of the fossil fuels
_____the extraction and refining of petroleum

12. Teaching Soil and Water Conservation
Soil Conservation Service

_____a teaching outline for a unit or short course in soil and water conservation
_____an annotated list of available publications and visual aids dealing with soil and water conservation
_____a guide to teaching rural students the value of a conservation farm plan
_____a series of projects to demonstrate basic concepts concerning soil and water*

13. Conservation of Our Renewable Natural Resources
Agricultural Stabilization and Conservation Service

_____projects dealing primarily with forest and wildlife resources
_____projects dealing with all natural resources*
_____projects dealing mainly with soil and water resources
_____ideas for attractively displaying conservation projects

14. Ranger 'Rithmetic
Forest Service

_____an explanation of the arithmetical knowledge needed by forest rangers
_____method of measuring timber
_____sample problems dealing with natural resources and their utilization*
_____a discussion of the importance of mathematical skill in professors dealing with natural resources

State Oriented Publications - Minnesota

1. A Guide for Instruction in Science Conservation
Department of Education

_____important understandings and pupil activities for teaching science and conservation
_____lesson plans for teaching science and conservation
_____suggested outline for field trips
_____annotated list of teaching aids for science programs

2. Conservation and You
Minnesota Education Association

_____curriculum guide for teaching conservation in elementary schools
_____a discussion of several of Minnesota's natural resources*
_____studying forest resources
_____teaching conservation through field experiences

3. The Beaver in Minnesota
Division of Game and Fish

_____law to trap and market beaver
_____the natural history, economics, and management of beaver in Minnesota*
_____game biologist's manual on beaver management
_____the story of the disappearance of beaver from Minnesota

4. Our Soil to Use
Agricultural Extension Service

_____a report on research of the Minnesota Agricultural Extension Service
_____managing soil for maximum crop yields
_____how to teach soil conservation in secondary schools
_____soil and soil conservation for young people*

5. The Conservation Volunteer
Department of Conservation

_____a bi-monthly report of the Minnesota Department of Conservation
_____reporting on waterfowl in the upper Mississippi flyway
_____organizations concerned with the protection of Minnesota wildlife
_____general conservation publication for the state*

6. Water Resources of Minnesota
Division of Waters

_____a conspectus of Minnesota water resources
_____a curriculum guide for teaching hydrology in Minnesota high schools
_____a discussion of water in its natural state and of water-resource management in Minnesota*
_____a guide to understanding the multiple-use concept of water-resource management

7. Forestry for Minnesota Schools
Minnesota Education Association

_____development and use of forest laboratories for school
_____guide to teaching tree identification
_____a discussion of forests and forestry with accompanying projects for classroom and field*
_____the importance of incorporating forestry into the high school curriculum

8. Developing the Resources of Minnesota
Iron Range Resources and Rehabilitation

_____developing other resources of the iron region*
_____improving Minnesota's agriculture
_____maintaining Minnesota's iron-ore production
_____multiple uses of Minnesota's farmland

Missouri

1. A Guide for Elementary Education
Department of Education

_____20 pages long
_____50 pages long
_____100 pages long
_____300 pages long*

2. An Approach to Conservation Education
Missouri Conservation Commission

_____a teacher outline for conservation in elementary schools
_____a discussion of some fundamental principles of ecology*
_____a discussion of the importance of game biologists in conservation education
_____tells the work of the Missouri Conservation Commission

3. In Your Hands
Missouri Conservation Commission

_____water
_____soil*
_____forests
_____wildlife

4. Meet My Neighbors
   Missouri Conservation Commission

   _____Consy Coon briefly describes some of the wildlife of Missouri*
   _____pictures of Missouri wildlife
   _____Consy Coon tells about his human neighbors - the careless ones and the conscientious ones
   ____children's field guide to the mammals of Missouri

5. Buteo's Forest
   Missouri Conservation Commission

   _____Buteo, the hawk, tells of his many forest friends
   _____how the red-tailed hawk was chosen as Missouri's bird
   _____hawks in Missouri
   _____a hawks view of what happens to the creatures of the forest as a result of man's carelessness*

6. Citizens of the Soil
   Missouri Conservation Commission

   _____some important soil organisms and what they do
   _____Dicky Deer explains the importance of soil to the wild animals of Missouri
   _____the importance of natural resources, particularly soil, in the history and development of Missouri*
   _____Indians of Missouri

7. The Little Stream
   Missouri Conservation Commission

   _____the effects of land abuse on streams and animal life*
   _____life history and habits of some of the organisms that inhabit Missouri streams
   _____the little stream tells of pollution and its effects
   _____an elementary introduction to the science of hydrology

8. Wildlife and the Soil
   Missouri Conservation Commission

   _____how clearing of land for agriculture affected wildlife population
   _____relation of soil fertility to animal productivity*
   _____role of wildlife in soil development
   _____accomplishments of the Missouri Conservation Commission

Ohio

1. The Development of Basic Conservation Concepts in the Elementary Grades
   Ohio Forestry Association, Inc.

   _____a pictorial development of conservation concepts
   _____group-graded conservation concepts*
   _____scheme of interrelationships of natural resources
   _____conservation practices and their importance

2. Nature Lore
   Department of Natural Resources

   _____woodcraft
   _____how to study nature
   _____a teacher's guide about Ohio's wildlife
   _____common plants, animals, and fossils of Ohio*

3. Understanding Ohio Soils
   Agricultural Extension Service

   _____a guide to teaching soil science in secondary school
   _____a guide to land-capability classification
   _____increasing crop yields through proper soil management
   _____explains the classification of Ohio soils*

4. Conservation In Action
   Ohio Forestry Association, Inc.

   _____black printing on salmon
   _____black printing on white
   _____black printing on yellow
   _____none of the above*

5. What Water Means to Ohio
   Ohio Water Commission

   _____how an average Ohio resident uses water each day
   _____a comic representation of the path traveled by a raindrop that falls in Ohio
   _____a general discussion of Ohio's water resources*
   _____water pollution in Ohio

6. Planning School Forests
   Ohio Forestry Association, Inc.

   _____outline for teaching forest biology
   _____development and use of land laboratories for schools*
   _____school camps for studying forest biology
   _____a course of study and projects to be used in a school-owned forest

7. Clean Waters for Ohio
The Ohio Water Pollution Control Board

_____a bulletin to sewage plant operators
_____a report to the public on progress in pollution control
_____a report on sources and treatment of municipal water water supplies
_____bulletin on cleaning Lake Erie and the Ohio River*

8. A Guide to Teaching Conservation in Ohio Elementary Schools
Ohio Forestry Association, Inc.

_____5 pages long
_____25 pages long
_____75 pages long
_____130 pages long*

Questionnaires for Principals

Instructions: Please answer every question to the best of your knowledge.

1. Your sex: Male_____Female_____

2. How many years have you been a principal?
   _____(1) 1-5 years
   _____(2) 6-10 years
   _____(3) 11-20 years
   _____(4) 21+ years

3. How many years have you served as principal in your present school?
   _____(1) 1-5 years
   _____(2) 6-10 years
   _____(3) 11-20 years
   _____(4) 21+ years

4. How many years full time teaching experience have you had?
   _____(1) 1-5 years
   _____(2) 6-10 years
   _____(3) 11-20 years
   _____(4) 21+ years

5. What grades have you taught?
   _____(1) primary (grades 1-3)
   _____(2) intermediate (grades 4-6)
   _____(3) junior high (grades 7-9)
   _____(4) senior high (grades 10-12)

6. What subject(s) did you teach?
   _____(1) general (most subjects)
   _____(2) English, language arts
   _____(3) mathematics
   _____(4) sciences
   _____(5) social studies
   _____(6) other(s) (specify ______________________________

   ____

7. What is the approximate present pupil-teacher ratio in your school?
   _____(1) 20-1
   _____(2) 25-1
   _____(3) 30-1
   _____(4) 35-1
   _____(5) 40-1
   _____(6) 45-1
   _____(7) 50-1

The Principal Questionnaire used the Teacher Awareness Questionnaire cover in a different color

8. The location of your school would best be described as:
_____(1) inner city
_____(2) city
_____(3) suburban
_____(4) town or village
_____(5) rural
_____(6) other (specify) ____

9. The socio-economic designation that best represents the neighborhood in which your school is located is:
_____(1) upper-class
_____(2) upper-middle class (unprofessional or scientific occupation)
_____(3) middle-middle class (managerial or executive occupation)
_____(4) lower-middle (clerical or sales occupation)
_____(5) working class (skilled craftsman, foremen occupations)
_____(6) middle-lower class (unskilled workers)
_____(7) lower-lower class (part time or seasonal unskilled)

10. In general, I feel that Conservation or Resource Use education is most effective if directed primarily to: (check only one)
_____(1) teachers
_____(2) students
_____(3) the general public
_____(4) technical people

11. In general, I believe that the present public-school efforts in Conservation and Resource Use education are:
_____(1) inadequate
_____(2) slightly inadequate
_____(3) adequate
_____(4) slightly more than adequate
_____(5) very adequate

12. On the average, how many official bulletins do you receive per month from the higher administration of your school system?
_____(1) none
_____(2) 1 to 5
_____(3) 6 to 10
_____(4) 11 to 15
_____(5) 16 to 20
_____(6) 21 and over

13. When was the main building of your school built?
_____(1) before 1900
_____(2) between 1900 and 1919
_____(3) between 1920 and 1939
_____(4) between 1940 and 1949
_____(5) between 1950 and 1955
_____(6) between 1955 and 1960
_____(7) after 1960

14. On the average, how frequently do you work on school business at home?
_____(1) zero nights per week
_____(2) one night per week
_____(3) 2 to 3 nights per week
_____(4) 4 to 5 nights per week
_____(5) more than five nights per week

15. Where do you now live?
_____(1) in the city in which I work
_____(2) in a nearby city
_____(3) in a nearby suburban community
_____(4) in a rural area near my work
_____(5) in a rural area some distance from where I work

16. In what type of community did you spend the major part of your youth?
_____(1) farm or village with up to 2,000 population
_____(2) small town (2,000-50,000 population)
_____(3) small city (50,000-100,000 population)
_____(4) large city (100,000 and over)

17. In which state did you spend the major part of your youth?

____

18. In what type of school did you receive most of your elementary school education?
A. _____(1) public
_____(2) parochial
_____(3) private
B. In which state? _______________
____

19. In what type of school did you receive most of your secondary education?
A. _____(1) public
_____(2) parochial
_____(3) private
B. In which state? _______________
____

20. At what type of college did you do most of your undergraduate work?
A. _____(1) state university
_____(2) state teacher's college or normal school
_____(3) other public college or university
_____(4) private university
_____(5) private teacher's college or normal school
_____(6) other private college
B. In which state? _______________________________

21. In general, what was the quality of your work when you were in college?
_____(1) graduated with honors
_____(2) above average
_____(3) average
_____(4) somewhat below average